UNITED STATES ARMY
AVIATION DIGEST
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WORLD HELICOPTER CHAMPIONS

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Cover: **We feature the emblem of the United States Helicopter Team that won the Fourth World Helicopter Championship competition in Poland. Also shown is CW2 George Chrest who gained top individual honors as the world's best helicopter pilot. Illustration by Paul Fretts**

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Honorable John A. Marsh Jr.
Secretary of the Army

Richard K. Tierney
Editor

The mission of the ***U.S. Army Aviation Digest (USPS 415-350)*** is to provide information of an operational, functional nature concerning safety and aircraft accident prevention, training, maintenance, operations, research and development, aviation medicine and other related data.

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A review of the prior year's accomplishments will many times cause us to resolve to do better in the new year. But there is one area wherein members of the Army Aviation community simply can't improve further. If you are among the World Helicopter Champions, where do you go from there? By now, everyone knows this is the title earned by our team at the fourth international competition held in Poland, but it is also the title of Major Bronislaw R. Maca's article in this issue. His words will give you the feeling you are there as the U.S. team put their helicopters through the strenuous and demanding events to bring home the team title as well as the top position in the individual standings.

A special awards ceremony for the team members was hosted by the Secretary of the Army in November at Fort Myer, VA, to include a review by members of the 3d U.S. Infantry, "The Old Guard." Brigadier General Don Parker talks about the occasion in "Department of the Army Aviation Update." As the Deputy Director for Requirements and the Army Aviation Officer in ODCSOPS, he also covers other significant items of aviation interest at the Pentagon level and plans to provide us with future quarterly "Update" articles. This should help to keep us all better informed as to what is transpiring at the Pentagon level affecting all of us in the aviation community.

Response from the field to our October 1981 "***Digest***" issue which examined helicopter air-to-air combat has been tremendous. Since all aspects of that broad topic could obviously not be covered in a single issue, you will see some follow-on articles in the months to come. We would hope that you in the field who are training on and testing these new concepts will send us your contributions. We know that much has already been done at Fort Hood—so let us hear from you.

This month we have "The Figher/Interceptor Helicopter—A Concept for Today and Tomorrow" by Major Frank E. Babiasz. Such an aircraft, he declares, would provide the "most mobile Army air defense system ever devised that is directly responsive to the ground commander."

Whenever we talk about our aircraft and their use, one item that always has to be considered is the matter of fuel. And at today's prices, we need to give it even more consideration. Our limited and expensive supply is opposed by an unabated and increasing demand, thus fuel conservation should be a topic of never-ending concern. Major Johnny J. Grice and Captain John R. Morrisette recognized the need for "a method for measuring our fuel efficiency which would be congruous for the total environment." The one they devised is described in "Increasing Efficiency in Mobility Fuels—An Approach to Energy Conservation." The authors relate some of the actions taken at Fort Rucker to decrease the use of mobility fuels. This article is worthy of close scrutiny by every member of the Army Aviation team because we must save energy today to have enough for tomorrow. Initiatives taken in 1981 at the School alone accounted for a savings of more than one million gallons of JP-4. But the Aviation Center accounts for only 25 percent of the Army's flying hours, so think how many more millions of gallons could be saved if all of our units apply equally stringent fuel conservation measures. We welcome the sharing of your ideas in this area.

Now speaking of tomorrows, there are several ahead of us in 1982. Let us challenge ourselves, each and every one in Army Aviation to higher standards of excellence in the coming year—on the ground and in the air. Be it in safety, operations, maintenance—in the motor pool or in the dining facility, set and achieve only the highest of Army standards. By so doing, Army Aviation, in this our 40th year of service to the nation, will continue to establish a proud heritage for those who follow. Happy New Year!!

Major General Carl H. McNair Jr.
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Illustration by Paul Frette

Major Bronislaw R. Maca
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WORLD HELICOPTER

THE FOURTH WORLD Helicopter Championships were held in Piotrkow Trybunalski, Poland, 140 kilometers southwest of Warsaw. The United States Helicopter Team was scheduled to arrive at Warsaw's Okecie Airport at 1415 on 11 August 1981.

I had been in Warsaw since 6 August 1981, attending to the details of the team's arrival and the last-minute changes to the coordination effected in June 1981. I was sitting at the airport director's office when a call came in on one of his telephones. The Galaxy, as it was referred to by all the Poles, had penetrated Polish airspace and was proceeding inbound. With me was the Army's PIO team from Heidelberg, Germany, which was to cover the arrival of the team and the Army's participation in the championships. Soon we departed for the domestic side of the airport, where the C-5A would park and offload. There was a sense of excitement and anticipation. I was particularly excited since I knew how hard the team had trained and prepared for this

competition and finally their much awaited arrival in Poland was going to materialize.

The domestic ramp had been cleared of all aircraft that usually occupy parking spaces there. A large crowd of news reporters, TV crews and airport personnel was already there. Since Warsaw International is considered a part of the Polish border, the WOP (border) guards were present everywhere. Their military uniforms and sidearms were a somber reminder as to where this was taking place. Finally, the landing lights appeared on the horizon. As they got closer, it was obvious that they belonged to the Galaxy. The massive landing gear touched the runway and a shiver ran down my spine. I was witnessing the largest aircraft in the world, flying American colors, landing in Communist Poland for the very first time. It was a historic event. All at once the responsibility that the team members shouldered had grown to enormous proportions. This was the very first time. It was a Aviation was going to demonstrate and display itself in a Communist country. What an awesome responsibility!

The colossal aircraft taxied majestically onto the parking ramp. Using the outside engines, the Galaxy "turned on a dime." It looked so huge and powerful. So American!

The welcoming party, including the American Ambassador to Poland, approached the aircraft. Finally, the door opened and the team came down the stairs. Honorable Francis J. Meehan, the U.S. Ambassador, warmly shook hands with each member of the team and the crew of the C-5A. He also addressed the team as a whole, welcoming them to Poland and wishing the team the very best in the upcoming competition.

I think it needs to be pointed out here that the prevailing Polish opinion of the American Soldier was very negative. It was based not only on the "sloppy Joe" image of World War II, but also on the Communist propaganda. Well, what they were witnessing was in drastic contrast to that. The Americans looked terrific. They were slim, trim and young. Their immaculate grooming complemented their perfectly fitting uniforms. Wearing an American flag on their shoulders, they appeared very confident and proud. The whole event seemed like a craft with superhumans landed from another world.

The American military earned the immediate admiration and respect of the Polish people. (Somehow I feel they (the people) had it all along, this was just an opportunity to express it.)

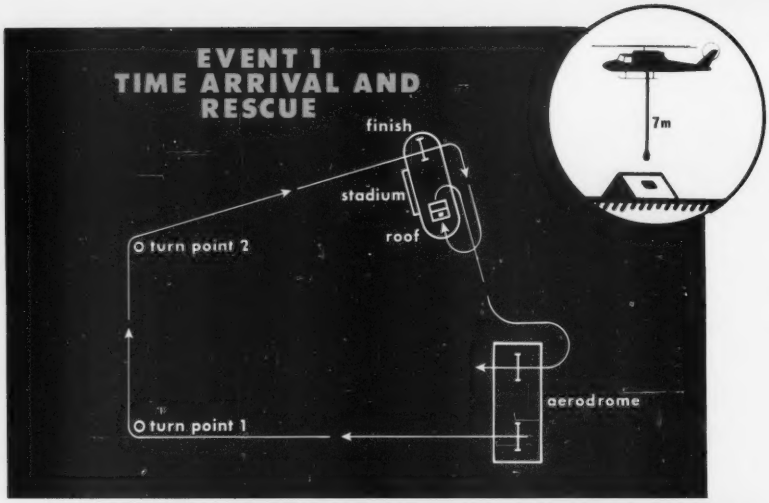
After the necessary formalities of customs and passport checks, the team proceeded to offload their equipment. This was probably the highlight of the C-5A's arrival in Warsaw. The crowd watched in amazement as the Galaxy knelt very gently before them. The TV cameras came to life as the nose of the aircraft slowly started its upward movement, revealing the enormous mouth and its interior cargo space. The whole operation looked like a demonstration of the free world's technological achievements.

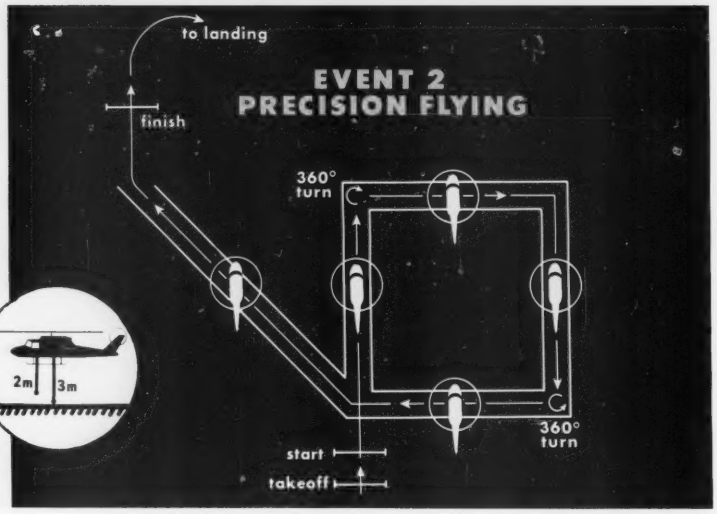
Silently the team went about emptying this whale. Everyone had his assigned duties and went about them in perfect harmony. To the amazement of the crowd, the team pulled out 3 UH-1H Huey aircraft, 4 OH-58 Kiowas, 1 M-880 truck and 2 X-4 containers loaded with tools and PLL (prescribed load list). In a matter of 3 hours, the C-5 was emptied and the team's aircraft were "dress right, dressed" on the ramp. Let me tell you, folks, they looked good. All were painted Army VIP scheme with glossy OD and white. Big, bold letters on the tail booms identified the proud men who flew and maintained them. Red, white and blue flags on each fuselage somehow looked different now. They looked brighter, bigger and so beautiful!

Since the team could not proceed to Piotrkow Trybunalski (the

CHAMPIONS

photo by Piotr Gawronski





site of the championships) until the 14th, the aircraft were repositioned to a holding area on the airfield.

The crowd received another treat as the Galaxy started its preparations for departure. The ramp went up, the nose came down and the whole aircraft got on its feet. As the C-5 rotated on takeoff and started a steep climb out, I looked at my watch. It was just past 1900 hours. Not too shabby.

Walking through the terminal on the way to my car, I noticed a large crowd of people gathered around a TV receiver. I could barely see the TV screen through the crowd. The national news was on and the team's arrival in the Galaxy was being covered in detail. I watched the whole program and listened to the candid remarks by the viewing audience. I was so proud to be an American!

The team stayed in Warsaw from 11 to 14 August. The objective of arriving early was to get over jet lag and to acclimatize to local conditions. The team took full advantage of this opportunity to sightsee in Warsaw.

On the 14th, all the teams were scheduled to arrive at Piotrkow Trybunalski. The organizer and his staff worked very hard to prepare for the championships. A lot of preparations were done at the last minute, because they too had anticipated the events in Poland to postpone or cancel the championships. At about 1200 hours, the U.S. team led by a Polish Mi-2 from Swidnik factory, arrived at Piotrkow aerodrome. As expected, the host team was already on the ground. Later in the afternoon, the teams from Russia, France, Great Britain and West Germany arrived in that order. Our only civilian entry in the competition, Bell 206L from Bell Textron, arrived with the West German team.

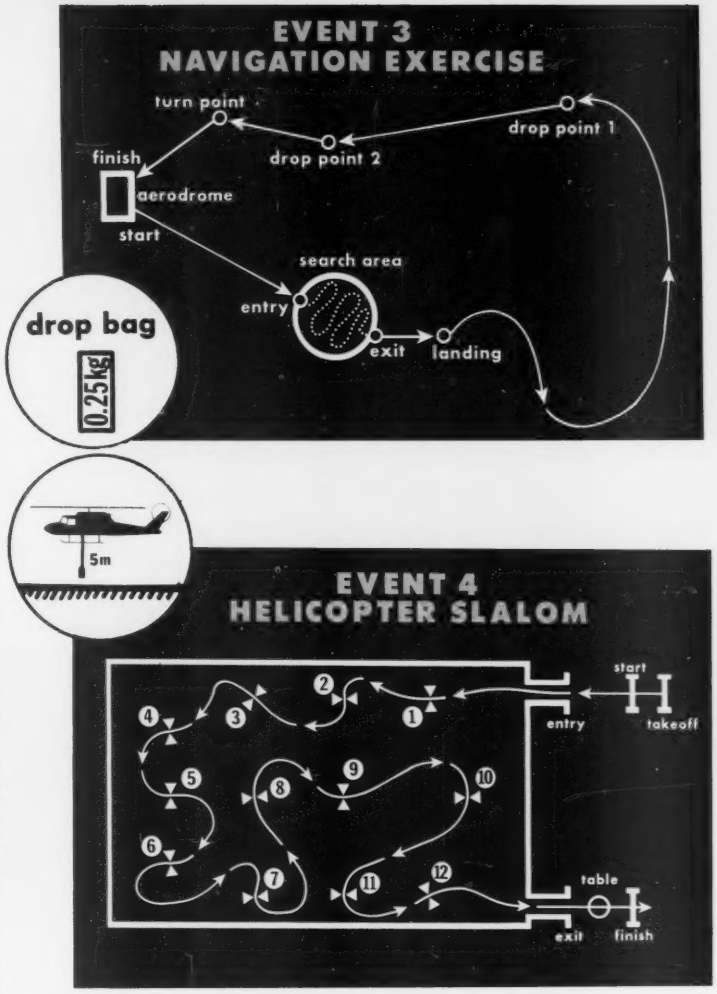
The next day's schedule started with Colonel Alojzy Gorny, the director of the championships, welcoming all the participants, wishing them great successes and introducing various officials. Most of the day was occupied by the many administrative details, meetings, technical checks of the aircraft and local area orientation flights. A pilot's meeting was held late in the afternoon to cover in detail tomorrow's first event of the competition, the timed arrival and rescue.

The official language of the competition was English (the working language was Polish); however, the majority of the material in the briefings was given in Polish and then translated. Although the organizer provided each team with a translator, complete translation was an almost impossible task since none of the translators were pilots. Therefore, none of the teams had the advantage of full knowledge. None except the U.S. team. Thanks to a very thorough and detailed "plan of attack"

by our commander/coach Major Roy E. Mann, the U.S. team had two native speaking linguists who were full functioning members of the team as well as aviators.

The first event of the competition was preceded by an Olympic style opening ceremony in the city's stadium. A crowd of about 20,000 spectators was on hand to witness the colorful parade of the teams, welcomed by Polish and FAI (Federation Aeronautique Internationale) dignitaries, and an air show of balloons, parachutists and fixed wing aerobatics.

The first event consisted of a rather simple navigation course (65 kilometers) with two turning points, terminating at the stadium. There, simulating the drop of a medicine parcel, the copilot had to lower a bottle of champagne suspended on a 7-meter rope through a 40 cm hole in a mock rooftop (see scoring chart). The pilot was given both the takeoff and arrival times. All the timing was measured electronically to 1/100 of a second. The first aircraft off the start line at the airfield was a Polish Mi-2, second was a Soviet Mi-2, third, a U.S. UH-1H piloted by CW3 Earl Jewkes, copilot was CW3 Robert Stolworthy. As the Huey crossed the finish line the announcer confirmed the unofficial finish time of 0.00 seconds deviation from the given arrival time. It was an extraordinary accomplishment. Although CW3 Jewkes and CW3 Stolworthy were competing in individual competition only, nonetheless, as the first U.S. aircraft across the finish line, they set the pace for the competition with this perfect 200 score. Another perfect score was achieved by CW3 Irwin Starrack and CW3 Robert Miller, flying for both team and individual competition, with 0.40 seconds deviation (standard round-off procedures apply, i.e., 0.49 seconds—no penalty points, 0.51 seconds—one penalty point). Backed by scores of 199 (CW2 George Chrest and CPT Stephen Kee) and 195 (CW3 John Bailey and CW2 Al Porter), the U.S. team took a 9-point lead over the second place British team at the end of the first day of competition. At the same time, in individual standings, the United States held the top three places. It was a great day for our team and it was obvious that the hard work was paying off.



Monday, 16 August, was the second event of the competition. Precision Flying was the name. Each aircraft had two ropes with small weights attached to them, directly beneath the pilot a 2-meter rope and behind him on the rear skid crosstube a 3-meter rope. The idea was to navigate a set course keeping the 3-meter weight on the ground and the 2-meter weight off the ground. The course was a 50 meter × 50 meter square with corridors 1-meter wide and a 70-meter exit corridor coming off at a 45-degree angle from one of the corners. The pilot was required to keep the front

rope attachment point inside the corridors and maintain constant heading while navigating the course frontwards, sidewards, backwards and diagonally. Two 360-degree turns had to be accomplished at two corners with a given minimum rate of turn. This was a timed event with the maximum allowed time for completion of 210 seconds. A last-minute change in the rules almost put the U.S. team off balance. The change allowed no part of the copilot's body to be outside the aircraft except his head. This was in great contrast to the way we practiced. However, due largely to our tactical training and the flexibility of our crews, the U.S. team was able to recover very quickly. The team of CW3 Irwin Starrack and CW3 Robert Miller recorded a perfect 200 score as did CW2 George Chrest and CPT Stephen Kee. CW3 John Bailey with CW2 Al Porter earned a 197 giving the U.S. team a comfortable lead of 15 points. Two other U.S. crews scored a perfect run in this event, CW2 Scott Berrier with WO1 Robert McConnell and CW3 Roger Bodwell with CW3 John Durkin. However, since they were in individual competition only, their score was not computed in the overall team score. By the day's end, the United States still maintained the top three individual places: 1. CW3 Starrack/CW3 Miller; 2. CW2 Chrest/CPT Kee, and; 3. CW2 Berrier/WO1 McConnell, who had just joined the top three.

The most difficult event of the competition was the third event, the Navigation Exercise. I think everyone knew that. Unfortunately, the Poles knew it also. It consisted of a long navigation course of 160 kilometers and an 8-kilometer-in-diameter circular search area with entry and exit points, a perfect semicircle navigation section, a pick-up point, two drop points and a couple of

Page 6, top to bottom: **Members of the U.S. helicopter team offload a UH-1 Huey from the C-5A Galaxy (photo by SFC Harold Hopewell)**

The U.S. team military members, front row, left to right, SFC David L. Young, CW3 Roger A. Bodwell, CW3 Robert L. Miller, CW3 Irvin B. Starrak, CW2 Alan L. Porter, CW3 John T. Bailey, SGT Charles R. Poole, SGT Patrick O. Jackson, SP4 Robert A. Didrickson, SGT Jimmie G. Mead, CW2 Scott E. Berrier, WO1 Robert E. McConnell, SGT Paul D. Smith, CPT John W. Connors; back row, left to right, MAJ Bronislaw R. Maca, CPT Karol J. Kawalec, CW3 Robert A. Stolworthy, SP4 Robert S. Frazier, CW3 Norman T. Thompson, CW3 Don E. Jewkes, MAJ Roy E. Mann, SGM John P. Traylor, CW2 Robbie D. Robinette, CW2 Ronald C. Whetstone, CW2 George D. Chrest, CW3 John J. Durkin, PFC Bowman T. Wright, SP4 Ralph T. Rogers, CW3 Ronald C. Rivera. Team members not pictured are: CPT Stephen G. Kee, CPT Arthur C. Sippo, SGT Paul C. Nelson; also International Assistant Judges LTC Herbert V. Kerner, CW4 Charles L. Proctor, CW2 Nick P. Walters

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Page 7, top to bottom: **CW3 John T. Bailey of the American team holds his OH-58 Kiowa in position as his copilot, CW2 Alan L. Porter, lowers a bucket of water on a target in the middle of a table, the final test in the slalom event (photo by SFC Harold Hopewell)**

SP4 Scott Frazier, crewchief with the U.S. Helicopter Team, gives his Huey a careful check before and after every flight (photo by Gary Bloomfield)

During a break in competition at the World Helicopter Campionships in Poland, WO1 R.E. McConnell (left) and CW3 Norman T. Thompson, both pilots with the U.S. Helicopter Team, "talk shop" with Russian female pilot Natasha Kostaneva (photo by Gary Bloomfield)

World Champion Helicopter Pilot, CW2 George Chrest, U.S. Army (behind) helps the former champion, Soviet pilot Vladimir Smirnov, prepare for a ride in an OH-58 Kiowa helicopter during exchange flights while the two were in Poland for the World Helicopter Championships. CW2 Chrest and other members of the U.S. Helicopter Team won both individual pilot and team competition (photo by Gary Bloomfield)

turning points. The crews were given start time, search area entry time and scheduled arrival time at the finish line. Along the flight route and in the search area were objects to be identified and recorded. Some were photographs and some were panel markers (1 meter × 5 meters). The time in the search area was limited to 6 minutes. Oh, wait, each crew received a map (with course drawn), search area entry time, arrival time and 8 photographs: They were given these exactly 5 minutes before takeoff. Ready? Go!

Well, nobody did well except the Poles. They placed seven of their crews in the top nine positions. (We found out the next day by looking at an overprinted T-shirt that Polish Championships were held in the same place in the spring.) Naturally, the Polish team won event #3, Germany took second, and the United States third.

The overall team standings still had us leading second place Poland by 6 points, with West Germany 8 points behind Poland.

Wednesday, 19 August, was the last compulsory event of the championships, the Slalom. It was shortly before this event that the U.S. team suffered its near fatal blow. After the first event, both Poland and Germany had protested points that had been deducted from their totals for snaking (changing aircraft's attitude or heading during the final 5 kilometers of the course).

Following close examination, the arbiter judges returned 25 points to Poland and 15 points to Germany. This put the U.S. team in third position, 19 points behind the leader. Taking the lead seemed such an impossible task being 19 points behind and with only one event left in the competition. The team was disheartened, but far from subdued.

The Slalom consisted of 12 gates, measuring 1 meter across and 2 meters high and oriented in different directions. The objective was to navigate a 6 kg bucket of water suspended on a 5-meter rope through these gates and then place the center of the bucket as close as possible to the center of a table (1 meter in diameter and 2 meters high) at the end of the course. Four minutes was the time limit for this event.

The team felt very confident about this event. It was our strongest and perhaps the most practiced event. The day prior to this final event, I told the Polish Radio, during a live interview, that I felt very confident our team would win the competition in spite of the set back (returning points to the Polish and German teams).

The pilots' briefing was held with no surprises and the starting order was confirmed. My confidence grew stronger as I learned that the Polish team celebrated its victory (the regained points) with a lot of Polish vodka the previous night. Just prior to the start, the U.S. team members got in a huddle by their aircraft. It was now or never. A few words, a few moments of silence then—Let's do it!

They did it! Every crew put out maximum effort with total concentration and determination. Not only did the U.S. team make up the 19 points on the Poles, it set them 20 points behind. Extraordinary! A gain of 39 points. The U.S. team also gained three points on the German team. This catupulted the Americans to first place only 2 points ahead of the German team and 20 points ahead of the third place Polish team. The United States had the World Champion Helicopter Team.

The crews that secured this final victory were: CW2 George Chrest/Cpt Stephen Kee—199 points, CW3 John Bailey/CW2 Al Porter—199 points, and Mr. John Williams/Mr. Morten Meng —199 points, both the latter from Bell Helicopter.

The outstanding performance by CW2 Chrest and CPT Kee secured them the top position in the individual standings.

In turn, CW2 Chrest was designated the World Helicopter Champion pilot. Both CW2 Chrest and CPT Kee were awarded the Distinguished Flying Cross.

CW2 George D. Chrest (left) and CPT Stephen G. Kee hold high the trophy for First Place Individual World Championship

photograph by SFC Harold I. Hopewell

Brigadier General Ellis D. Parker
Army Aviation Officer, ODCSOPS, HQDA

Department of the Army
AVIATION UPDATE

ONE OF MY CONCERNS while commanding the 17th Aviation Group in Korea was being able to keep my command current on all of the many happenings in Army Aviation around the world. Now that I am the Deputy Director for Requirements and the Army Aviation Officer in the Office of the Deputy Chief of Staff for Operations and Plans (DCSOPS), I want to do everything I can to assist field commanders in keeping their commands informed. As I view our aviation program from my vantage point in Washington, there are numerous activities taking place that many times we assume are common knowledge in the field. Knowing that this is not the case, I want to be sure that Department of the Army (DA) level aviation actions are communicated as widely as possible through the various forums we have available.

This is the first of a series of articles that will be entitled "Department of the Army Aviation Update" and published quarterly in ***Aviation Digest***. In attempting to outline the many facets of our aviation program for you, I will be drawing from the monthly meetings of our recently established Washington area aviation "team." A few months ago, representatives from 25 different DA-level agencies met for the first time to update each other on current activities, and to share our best thoughts and ideas on where we are—or should be—headed. The results of our first three meetings have been extremely beneficial in allowing for closer coordination of actions directly affecting Army Aviation and in keeping me informed across the entire spectrum of aviation issues. Much of that information is passed on to you in this article.

Before doing so, however, let me briefly relate the results of two very important events involving Army aviators. We held our annual U.S. Army Aviation Training Symposium and Policy Committee Meeting at Ft. Rucker, AL, last November. For 5 days, the Major Army Command (MACOM) aviation officers, several group and battalion/squadron level commanders, and representatives from many aviation units worldwide met to study and propose resolutions to some 75 issues affecting all aspects of our aviation program. We heard keynote addresses from General Robert M. Shoemaker, commander, U.S. Army Forces Command, and Major General Guy S. Meloy III, director of training, DCSOPS, that set the tone for what proved to be an extremely productive session for all involved. The hard work and insight of some of Army Aviation's best will definitely assist decision-makers at all levels to chart the course in policy and program development for both the present and the future. I will not go into detail here on the issues we tackled because the ***Aviation Digest*** covered the conference in the December issue and is planning a more comprehensive article. Also, I am relying on your representatives who participated to debrief you on the results. I do, however, want to be sure that the key issue transcending all others is clear to all: *Army Aviation must be fully integrated into every aspect of the Army's combined arms training program.* We spent a lot of time talking about that one issue, and I trust that each representative carried back to the field a renewed vision for meeting our responsibilities as a member of the Army combined arms team. We are on our way, but must continue with dedicated efforts if we are to measure up to what is expected of us.

The second event I want to highlight is the awards ceremony held in November for the Army members of our World Champion Helicopter Team which is featured in this issue of the ***Aviation Digest*** in an exceptionally fine article by Major Bruno Maca. He did an outstanding job as executive officer of our team. As most of you know, we sent a United States team of our very best military and civilian helicopter pilots to Piotrkow Trybunalski, Poland last August to compete in the Fourth World Helicopter Championships. Due to the hard work and flying skill of some tremendously dedicated people, the United States team won the championship and also had the winning crew in Chief Warrant Officer, CW2, George Chrest and Captain Stephen Kee. The significant accomplishments of the Army team members, so indicative of the teamwork, professionalism and competitive spirit that is integral to Army Aviation, were duly recognized in a truly impressive awards ceremony at Ft. Myer, VA. The ceremony was hosted by the Secretary of the Army, the Army Chief of Staff and the 3d Infantry (Old Guard), and was attended by many from throughout the Washington area. The Secretary of Defense, the Honorable Casper Weinberger, was the guest speaker and paid special tribute to those who so well represented their country and Army Aviation in world competition. It was definitely a fitting culmination to many months of preparation and execution.

This quarter, I want to update you on several areas. In our equipment research, development and acquisi-

> . . . will enable the AHIP/NTSH to designate targets for the HELLFIRE . . . COPPERHEAD . . . and Air Force *smart bombs.*

tion, there is significant activity in almost every major program.

• Army Helicopter Improvement Program/Near-Term Scout Helicopter (AHIP/NTSH). On 21 September 1981, the Army announced the award of the development contract for AHIP/NTSH to Bell Helicopter Textron of Fort Worth, TX. The contract calls for improvements to OH-58 Kiowa helicopters in the active Army inventory. The mission equipment to be installed on the NTSH includes a mast-mounted sight for day and night target acquisition and laser designation from masked positions. The laser range finder/designator will enable the AHIP/NTSH to designate targets for the HELLFIRE missile fired from the advanced attack helicopter, the COPPERHEAD laser guided artillery munition and Air Force "smart bombs." The AHIP/NTSH also will be equipped with a Doppler navigation system and improved communications gear. Hover performance improvements will be made to enable the system to meet worldwide employment requirements that include Middle East contingencies.

• AH-64 Apache. On 18 November 1981, the Army System Acquisition Review Council (ASARC), chaired by the Army Vice Chief of Staff, decided to enter production on both the AH-64 and HELLFIRE. The procurement program calls for 446 aircraft to be delivered to the Army between fiscal year (FY) 1982 and the end of FY 1988. The Army production decision will be presented to the Defense System Acquisition Review Council (DSARC) early in February for final approval. This decision is indicative of Army recognition of the tremendous combat multiplier potential in aviation systems. We now face the task of preparing for the training and employment challenge that will confront us in fielding this impressive aircraft system.

• AH-1S Cobra. The contract for Phase I implementation of the FLIR (forward looking infrared radar)-Augmented Cobra Tow Sight/Improved Tow Missile System (FACTS/ITMS) program was signed by the contracting officer on 16 September 1981. Phase I is the program analysis phase whereby the contractor provides analysis for augmenting the telescopic sight with a FLIR module. Contract dollar value for FY 1981 obligation is $1.8 million. FY 1982 funding requirements of $.9 million were awarded 31 December 1981. Total Phase I contract effort is estimated not to exceed $2.7 million.

• CH-47D Chinook. The Desert RAM (reliability, availability, maintainability) test of the CH-47D was completed at Yuma Proving Grounds, AZ, on 11 September 1981. The test lasted 43 days and consisted of 80 flight hours during day and night operations with internal and external loads in a sandy, dusty, desert environment. The aircraft and crew were exposed to natural heat with ambient temperature 121°F, cockpit temperature 132°F and frequent surface temperatures above 140°F. No significant CH-47D peculiar problems in a desert environment were identified; and assessment of RAM, human factors, safety, logistics supportability, aircraft capabilities and maintenance personnel training on the CH-47D in that environment has been determined successful and satisfactory.

• UH-60A Black Hawk. The Black Hawk program is on track, with continued efforts to "fine tune" where necessary. Congress recently accepted the Army proposal to produce 96 aircraft during FY 1982 to add to the fleet. On 4 November, the 200th UH-60A was delivered to the Army by Sikorsky. To date, Black Hawks have been assigned to six U.S. Army combat units and two training commands. They are operational with the 101st Airborne Division (Air Assault), Ft. Campbell, KY; 82nd Airborne Division, Ft. Bragg, NC; 9th Infantry Division, Ft. Lewis, WA; and combat support aviation companies at Forts Stewart and Benning, GA. Black Hawks are also assigned to Ft. Rucker, AL, for pilot training and Ft. Eustis, VA, for maintenance training. UH-60A aircraft will soon be delivered to selected units in U.S. Army, Europe (USAREUR).

• Improved GUARDRAIL V Contract Award. On 30 September 1981, the signing of the FY 1981 Improved GUARDRAIL V contract took place at the Electronic Warfare Laboratory, Ft. Monmouth, NJ. This award will procure the first of the Improved GUARDRAIL V systems that will replace the GUARDRAIL V systems deployed in October 1978. Electromagnetic Systems Laboratories, Sunnyvale, CA, is the prime contractor with Beech Aircraft Corp., Wichita, KS being the subcontractor.

• Aircraft Survivability Equipment (ASE). A planning conference was held with the ASE project manager and the users (both Army and Marines) to develop a

requirements specification for an upgrade to the AN/APR-39(V)1 radar warning receiver (RWR). The user has stated that the number one ASE priority is the addition of a small processor (voice synthesized) to the RWR which would incorporate millimeter wave, laser warning, chemical warfare and interometer information. This would permit the pilot, flying at nap-of-the-earth (NOE), to be warned of a radar threat without having to check an indicator on the instrument panel. The Marines will fund the research and development effort in FY 1982, the Army will fund it in FY 1983 and, if all goes well, a production decision could be possible in FY 1984. ASE contracts awarded recently include the production of the AN/ALQ-156 missile detector for the CH-47 and the AN/APR-39(V)2 SEMA Radar Warning Receiver. Research and development contracts call for the design, integration, fabrication test and qualification of three prototype Hover Infrared Suppressor Subsystems (HIRSS) for the UH-60 Black Hawk aircraft and an Infrared Countermeasures Suppressor/Jammer installation retrofit kit for the UH-1H.

• Night Fix. In view of the urgent need to fight at night with night vision goggles, action has been taken to achieve compatibility between the goggles and the aircraft lighting systems. A plan of execution, called Night Fix, was developed by the Army Materiel Development and Readiness Command (DARCOM) and has been implemented. During Phase I Night Fix, the UH-1, CH-47, OH-58 and AH-1 aircraft will be modified by a DARCOM team at selected field locations. The modification adds blue/green lighting filters to the current red lighting in these aircraft. The Night Fix will meet the urgent requirement to fight at night with night vision goggles. The following milestones have been established for Phase I Night Fix Program:

15 October 1981 to 31 October 1981	Prototype cockpits were modified at Corpus Christi Army Depot (CCAD), TX.
1 November 1981 to July 1982	CCAD fabricates and assembles kits.
5 January 1981 to 31 August 1982	Kit application at established sites.

In the area of commissioned aviator management, the Aviation Center at Ft. Rucker, AL, is moving full speed ahead to assume its new role as the personnel management proponent for Specialty Code (SC) 15, as outlined in the new AR 600-101. Concurrently with organizing to meet this new requirement of decentralized proponency, Major General Carl H. McNair Jr., Aviation Center commander, and his staff have carefully evaluated the current accession methodology and training program for our company grade aviators. Briefings were presented recently to the Army Staff, MACOM commanders, and to the Army Chief of Staff on the current status and options for the future in these two areas. The Chief of Staff concurred with the recommendation to continue bringing officers into the aviation program in the three aviation specialties (SC 15, 71 and 67J) and commissioning them into the approved "carrier branches" as now programed in the aviator management plan. He further concurred with the plan to continue current efforts to improve combined arms training for both aviators and ground combat arms in our officer education system (Officer Basic Course/Officer Advanced Course) and in our unit training programs. The Transportation Center, Ft. Eustis, VA, as the proponent for SC71 aviators, is also actively pursuing its new personnel management responsibilities.

The aviator training challenge is one that will always be with us. The task is not easy. Not only are we faced with the requirement to be technically proficient in aviation systems that are becoming increasingly complex, but aviators must know combined arms tactics better than anyone on the battlefield. Obviously, initial entry flight training just gets us started in learning the system—the real proficiency comes with extensive hands-on experience in the field. Likewise, the basic and advanced courses are not structured to produce aviator tactical experts. The Training and Doctrine Command (TRADOC) proponent schools that train aviators are attempting to develop a curriculum that will integrate air and ground tactics for both the aviator and their Armor, Infantry, etc., contemporaries. But real expertise in combined arms employment comes from training together at the unit level. Improvement is needed on both sides in our field training programs. Aviation commanders must "push" their capabilities and inform ground commanders on how to employ aviation. Conversely, ground commanders must "pull" aviation into the ground scheme of maneuver and use the aviation assets available to multiply their own capability. The joint training opportunities are there. We must discipline ourselves to take advantage of them during every exercise.

Force Structure is receiving considerable emphasis right now. The Total Army Analysis (TAA-88) Study is examining the feasibility of converting all divisional (except the 82d and 101st) TOE aviation units to the Cavalry Brigade (Air Attack) (CBAA) structure using current and projected assets. The goal of this effort is to provide data with which to make decisions regarding the aviation force structure to be included in the FY 1984 to 1988 program objective memorandum (POM) next spring. Any trade-offs necessary to achieve the divisional CBAA structure that cannot be resolved by TAA-88, plus the aviation structure for corps and echelons above corps (EAC) will be addressed by the ARCSA IV study scheduled to begin 1 April 82 with a completion date of the end of 4th quarter FY 1982.

In January 1982, the Army will begin testing the concept of including aircraft with its POMCUS equipment in Europe.

For aviation enlisted personnel, implementation of CMF 67 (Aviation Maintenance) decisions continue. In other areas:

Effective 17 August 1981, both enlistment and reenlistment bonuses were increased for military occupational specialty (MOS) 93J (air traffic control (ATC) radar controller) and MOS 93H (ATC tower operator). Anyone enlisting for one of these MOSs for 3 years receives a $5000 bonus. Reenlistment bonuses were increased to 4A (Soldiers with between 21 months and 6 years service), 4B (6 to 10 years), and 4C (11 to 14 years). This equates to monthly base pay × 4 × number of years of reenlistment. Training rates have doubled for FY 1982 and almost all quotas have been filled. Further expansion of training rates is expected for FY 1983. The Army has 197 air traffic controllers currently TDY (temporary duty) to the Federal Aviation Administration. They will be returning to their Army jobs in phases during FY 1982.

TRADOC has recently approved and will conduct an Aviation Life Support Equipment (ALSE) ASI Q2 training course. It will be conducted at Ft. Eustis, with 12 classes scheduled each year. Quotas for FY 1982 classes will be nine per class with MILPERCEN (U.S. Army Military Personnel Center) responsible for filling four or five seats per class. Soldiers in grades E5 through E7 possessing any of the 67 series MOSs may apply for attendance in course number 860-ASIQ2 on DA Form 4187 which must be forwarded through normal command channels to Commander, U.S. Army MILPERCEN, Attention: DAPC-EPT-F, 2462 Eisenhower Ave., Alexandria, VA 22331. Applicants not on assignment instructions may be scheduled to attend in a TDY and return status only if the local command will fund the school. Soldiers on assignment instructions will be scheduled in a TDY enroute status. Those wishing to attend enroute to a new duty station must apply in sufficient time to allow for forwarding of application and amendment of PCS orders prior to departure from losing command. This course will replace the one at Chanute AFB, IL.

DA Circular 611-81-2, dated 1 March 1981, provides instructions to implement enlisted MOS changes to CMF 67. A new MOS, 67H Observaton Airplane Repairer, was established to provide separate identification for those positions and personnel in units equipped with OV-1 aircraft. There was no change for positions or personnel in units equipped with utility/cargo airplanes, which remain 67G.

Most of our developmental and operational testing for major systems has been completed. The Advanced Attack Helicopter operational test II was completed on 28 August 1981. The only major tests projected for the near future involve the Cobra FLIR-Augmented Cobra TOW Sight (FACTS) and the near-term scout helicopter (AHIP). Other tests recently completed, underway or scheduled to begin soon include the Helicopter Flotation Kit, UH-60 Flight Simulator (OT II), Instrument Meteorological Conditions Simulator (CEP), UH-60A Aeromedical Kit (OT IIA), Aviators Night Vision Imaging System (ANVIS), XM-33 Protective Mask, Air-to-Air Missile Concept Evaluation Program, Night Hawk/Night Vision Goggle Weather Minimums Test, MILES-AGES/AD, and the Helicopter Oxygen System.

Mr. Joe Cribbins, the Special Assistant for Aviation to the Deputy Chief of Staff for Logistics, remains busy as always. In January 1982, the Army will begin testing the concept of including aircraft with its POMCUS (Prepositioned Overseas Materiel Configuration In Unit Sets) equipment in Europe. Fourteen AH-1S aircraft will be stored in a humidity controlled environment as part of this test. Additionally, adding a National Guard Aviation Repair and Classification Depot (AVCRAD) to the POMCUS program is planned. The mission of the AVCRAD would be to facilitate the pipeline flow of aircraft to and from Europe and to provide back-up depot level repair to USAREUR aviation units. Out at Fort Lewis, WA, the DCSLOG has asked Major General Robert M. Elton, 9th Infantry Division commander, to evaluate the need for a maintenance battalion versus the company that is currently included in the CBAA structure. The CBAA test is scheduled to begin in February.

For aeromedical aviators; the aeromedical kit for the UH-60A successfully passed its second operational test (OT II) with the 326th Medical Battalion, Ft. Campbell, KY in September. The first Black Hawk for aeromedical evacuation units will be fielded beginning in March 1982 with the kits installed.

National Guard (NG) aviators are excited about some innovations in their aviation program. The most

recent was the formation of four AVCRAD round-out units. During mobilization these units are assigned to DARCOM to provide depot level aviation maintenance. Additionally, they have a real peacetime mission of providing back-up AVIM (aviation intermediate maintenance) and limited depot repair to NG aviation units. In the training area, initial entry rotary wing training quotas for the NG increase over the next few years to 205. By the way, if you missed the November 1981 issue of the ***Aviation Digest,*** I recommend you get a copy. It has excellent coverage of the National Guard.

For our military intelligence aviators; TRADOC, DARCOM and the Army Staff are in the initial stages of evaluating requirements for SEMA-X, a replacement platform for the OV-1 Mohawk and eventually the RC-12 Huron. Additionally, development of the Integrated Inertial Navigation System (IINS) continues in an effort to provide an accurate avionics navigational and positioning system to support the special electronics mission.

The Aeronautical Services Office at Cameron Station, VA, represents the DCSOPS in providing liaison to the Federal Aviation Administration (FAA). I'd liked to highlight a few of the areas this office is involved with.

Pressure on special use airspace (restricted areas, etc): The ever increasing competition for use of the national airspace is putting increased pressure on Department of Defense requirements for special use airspace. Increased aviation fuel costs make direct routing increasingly important to the hard pressed commercial carriers. Special use airspace frequently causes deviations from direct routing. The constant pressure on the FAA has the effect of continuously eroding the availability of special use airspace through procedural changes and increased segmentation. It is imperative that the Army present a logical and credible rationale for its special use airspace requirements as well as being perceived as an efficient and cooperative user of it. The FAA has begun a 4 year program for a complete review of the National Airspace System (NAS). This review could challenge military airspace needs. While the Air Force owns most of the restricted airspace, the Army has almost 100 areas that are also under constant review. The DOD input to this review will be through the DOD Advisory Committee on Federal Aviation, of which the DCSOPS is the Army member. DOD is trying to place an Air Force general officer on the FAA executive Review Board of the National Airspace System Study in an effort to ensure that military needs are adequately considered.

The increased competition for the use of the national airspace is further manifested in the increased emphasis on strict adherence to Federal Air Regulations. All of us need to make sure we know and comply with these regulations.

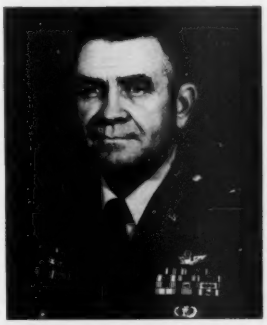
The FAA Administrator has selected Traffic Alert and Collision Avoidance System (TCAS) as the collision avoidance system for the United States. The impact on the Army will probably be to require an improved transponder. A Mode S (data link) will be added at sometime in the future. The Army may have to purchase a TCAS I for its CONUS based U-21/C-12 fleet within 5 years at a cost of about $5 to $10 thousand per aircraft.

The U.S. Army Reserve (USAR) Aviation program is preparing to meet some real challenges in the near future. The biggest source of aviators to fill Army Reserve Aviation units and Individual Ready Reserve (IRR) positions are former active component aviators. The great majority of these officers are Vietnam veterans who are moving toward retirement beginning in 1987. Average USAR aviator age is almost 37 years. The Office of the Chief, Army Reserve plans to conduct a brief survey among its 1400 aviators to get a profile of the aging aviators' retirement intentions. The profile will permit them to forecast the need for initial entry training and recruiting efforts more accurately. The December 1981 issue of the ***Aviation Digest*** has several outstanding articles covering USAR aviation. And, if you will be completing active service in Army Aviation, you will be interested in the listing on the outside back cover of the December issue. It contains a listing of USAR aviation units and their telephone numbers in 27 states. If you can't get a copy of this issue write the editor at P.O. Drawer P, Ft. Rucker, AL 36362. It's a wise decision to join one of these fine units.

There are several aviation studies underway at the Concepts Analysis Agency in Bethesda, MD. One of these is the Apache, Black Hawk and Chinook Self-Deployment Helicopter (ABCD) Study, which began in October 1981 and is scheduled to continue through June 1982. The study plan has been approved, mission profiles are being established and an ABCD model development is on schedule. This study will thoroughly review the subject of helicopter self-deployability in order to provide the Army with recommendations concerning the feasibility of helicopters being flown to overseas areas.

I trust that the information provided above is of some use to you as you continue to represent Army Aviation, no matter where you are assigned. I look forward to your comments or suggestions as we continue to expand our dialogue together in the months to come.

BG Ellis D. Parker



UH-1H Performance Planning

IF ON YOUR LAST mission you had been given an in-flight mission change to pick up a full load of combat equipped troops, would you have known what indicated torque at a 5-foot skid height hover corresponded to an aircraft gross weight of 9,500 pounds? If you answer is NO, then you are the individual who needs to keep reading. If your answer is YES, read on anyway. You might be surprised!

Without quoting numerous statistics from our visits to the field, one of the weaker areas found during oral evaluations is the use of the Performance Planning Card (PPC). The following paragraphs should clear up any misunderstandings; and the reading will be enhanced if, right now, you get yourself a cup of coffee, a—10 and a TC 1-135 aircrew training manual (ATM).

Task #1005 in the ATM states that the PPC (DA Form 4887-R (1 Jun 80)) will be used, so now is a good time to check whether your unit has a supply of current PPCs and to dispose of all those obsolete cards lining drawers and cluttering closets. The same task states that the PPC *will* be computed for all takeoff and landing operations to include, as a minimum, those items preceded by an asterisk. How often have you defaulted in that task? It takes about as long as it took you to get the aforementioned cup of coffee to compute and complete a PPC; so each time you fly, get your copilot to get the beverages while you complete a PPC.

Task #2002 in the ATM gives very explicit instructions on how to compute performance for most of the PPC asterisk items. Briefly outlined, to compute the maximum torque available, use the chart on page 7-13 of the —10 and note that this chart is for 30-minute operation. The implications of using this chart as opposed to the continuous operation chart on the next page is that the engine EGT (exhaust gas temperature) is likely to be in the yellow range (610 to 625 degrees C) when using maximum torque available. By intersecting the pressure altitude and temperature in the top chart and moving vertically downwards, the maximum calibrated torque can be read. Turning to page 7-17 of the —10, the GO-NO-GO can be computed. Starting at the bottom left chart, move vertically upwards from the maximum calibrated torque available to the 50-foot out of ground effect (OGE) line; move horizontally to the 5-foot skid height line and then vertically downwards to read the calibrated GO-NO-GO torque. Provided that you have this figure (converted to an indicated torque) or less in a 5-foot hover power check, you have sufficient power to perform any maneuver in the flight envelope of the aircraft at that density altitude. However, prior to nap-of-the-earth flight, an OGE hover check is required in accordance with TC 1-135, Task #4008. Predicted torque is computed by intersecting pressure altitude and temperature in the top chart, moving vertically downwards to the appropriate weight, horizontally left to the 5-foot skid height line and vertically downwards to read the calibrated torque. Predicted torque, unlike maximum torque available and GO-NO-GO torque, is not a function of engine performance; and there can be a difference between predicted torque and the torque actually indicated in a 5-foot hover due to numerous errors, such as gauge inaccuracy, dirty main rotor blades or wind.

Note #1 in Task #2002 states that certain GO-NO-GO torques equate to a gross weight in excess of 9,500 pounds and that the hover chart should be used to find the torque setting that corresponds to 9,500 pounds. Recent graduates from flight school may have heard this referred to as "corrected GO-NO-GO" or "modified

illustration by Fred Martin

GO-NO-GO"; but with no such nomenclature on the new (and much printed) PPC, it was decided to call it "Validation Factor." Validation factor is computed by intersecting pressure altitude and temperature, moving vertically downwards to 9,500 pounds, horizontally across to the 5-foot skid height line and vertically downwards to read a calibrated torque. A number of avid readers of FLIGHTFAX were slightly confused by the last paragraph of this past July's STACOM #70 regarding validation factor. To clarify this matter, if in a 5-foot hover, the indicated torque is more than the predicted validation factor indicated torque, the aircraft is likely to be in excess of 9,500 pounds. Land the aircraft and either off-load cargo or recompute the 365F (weight and balance form) to confirm the weight of the aircraft. If the weight is below 9,500 pounds, then the GO-NO-GO may be used. (Remember GO-NO-GO is a function of engine power and validation factor being a predicted torque could be inaccurate because of dirty main rotor blades, etc.)

All calibrated torques are converted to indicated values by the use of the chart on page 7-13 of the —10. Move vertically upwards from the calibrated torque to the calibration factor obtained from the aircraft engine data plate, then move horizontally left to read the indicated torque.

Safe pedal margin can be computed from the hover chart only if you have calm winds. If there is a wind, then the cart on page 5-4.1 of the —10 will be used. In the upper chart intersect pressure altitude and temperature and move vertically downwards to the weight of the aircraft. This point, by interpolation between the given wind speed lines, will give a wind speed below which there is a safe pedal margin. If the actual wind is at or above that interpolated, note which lettered sector the point is in, and turn the page. Select the wind speed and move around to the point where it enters the appropriate lettered sector and note the radial; then do the same where it exits the lettered sector. You should avoid placing the wind between these two radials, relative to the nose of the aircraft at a hover. Computing for a pinnacle landing at a pressure altitude of 10,000 feet, outside air temperature of 0 degrees C, gross weight of 8,500 pounds and wind of 360/10, the chart shows its necessity if the most desirable approach is 300 degrees.

There are a number of things wrong with the Directional Control Margin charts of Change 6 to the —10, but DA Form 2028 action is in hand and there will be a change in the near future.

Landing data need only be computed if there is going to be a significant change in density altitude (pressure altitude and/or temperature).

With the practice of computing performance for each flight, it becomes second nature, and hopefully this weakness found in many aviators will become a strength.

DES welcomes your inquiries and requests to focus attention on an area of major importance. Write to us at: Commander, U.S. Army Aviation Center, ATTN: ATZQ-ES, Ft. Rucker, AL 36362; or call us at AUTOVON 558-3504 or commercial 205-255-3504. After duty hours call Ft. Rucker Hot Line, AUTOVON 558-6487 or 205-255-6487 and leave a message

When it comes to identifying the greatest single cause of Army aircraft mishaps and placing the blame squarely where it belongs, nothing can compare with . . .

U.S. ARMY SAFETY CENTER

telling it like it is

TECHNICALLY speaking, all mishaps are associated, directly or indirectly, with the human element. For example, when some component of an aircraft fails prematurely and produces a mishap, the materiel failure can, in theory, be attributed to the human element. After all, somebody designed the unit, determined the materials to be used in its construction, manufactured it, and after inspecting and testing it, issued it for use.

Although deficiencies in design have, at times, produced catastrophic results, most such deficiencies are identified and corrected before any serious mishaps can occur. As a rule, the remedy appears in the form of an MWO or as a replacement item.

On the other hand, the human element is directly responsible for some of the system failures which often lead to mishaps. These result from what might be termed voluntary or willful human action--but one that is not done with any intent to cause problems. Usually this type of error, although committed deliberately, results from a lack of knowledge and a lack of supervision.

Examples are numerous. One concerns problems associated with UH-1 trunnion installation. Following a mishap that occurred when a trunnion separated from the outer swashplate, maintenance personnel performed a one-time inspection of their unit aircraft. Their findings were significant. Common discrepancies noted included the use of screwdrivers or other unauthorized tools to spread trunnion bore ears during removal and installation of trunnions; failure to properly align trunnion slots with bolt holes; and forcing retaining bolts in place by pounding them with a hammer or twisting them with a wrench when bolt holes and trunnion slots were improperly aligned. As a result, trunnion bores were found to be permanently distorted and housing ears as well as bolt threads and shanks severely damaged.

Yet, the improper maintenance procedures described were not followed with any intent to induce incipient failure or endanger the safety of aircrews and equipment. On the contrary, these actions stemmed from a lack of knowledge and understanding of the critical aspects of these components and the need for strict by-the-book maintenance. This fact was illustrated when personnel performing the one-time inspection were found using the same improper procedures. In fact, while performing the one-time inspection, one mechanic broke a section of a trunnion bore ear when he pried the ears apart with a screwdriver.

On the other hand, a great number of mishaps are caused by the willful and deliberate violation of ARs and SOPs. One such example concerns a UH-1 pilot who deviated from his planned route and descended low over a lake resort area. While flying at an altitude that varied from about 50 to 100 feet agl, his aircraft struck high tension wires and crashed.

Then, we have what may be termed true or pure human error. Unlike those described, this type of error does not stem from lack of knowledge, intentional violation of regulations or from any unsafe act willfully performed. It is simply an error made inadvertently by an individual. It may be one of commission or omission. It may be judgmental or mechanical. In any event, the final result is often the same: a mishap.

A prime example involved the pilots of a fixed wing aircraft on an administrative flight. The pilots elected to fly at an altitude that would provide the passengers the most comfort. As they neared their destination, they failed to increase their altitude, as required, to clear mountain peaks along their flight path. The end result was impact with the side of a mountain. This pilot error was compounded by the actions of ground control personnel who were changing shifts about the time the aircraft should have been climbing to the higher altitude. Consequently, neither ground control operator requested verification of the aircraft's altitude.

Obviously, human error is not restricted to pilots or to any single area of activity. Maintenance personnel are especially susceptible. In one instance, the crew chief of one aircraft that had departed the site hurried to help another crew chief get his aircraft airborne. In his haste, he rushed into the spinning tail rotor blades of the aircraft and was killed.

Since no one intentionally wants to become involved in any kind of mishap, what causes individuals to make the errors that invite injury and even death? No simple answer exists. However, we do know that stress plays a major role in causing mishaps. Further, we can identify a variety of stress factors that can induce human error. Prime among these catalysts are those associated with fatigue; with the environment; with excessive use of coffee, tobacco, alcohol and other drugs, including those obtainable over-the-counter; and with a host of other factors such as those related to the emotions as well as to the tasks to be performed, their number and complexity.

While stresses imposed upon an individual are usually multiple in nature, a single stress factor, if sufficiently severe, can effectively reduce a person's efficiency to a point at which he can no longer safely perform his job. Fatigue is just such a stress. Further, it is universal in nature. While those stresses associated with the use of coffee, tobacco, alcohol and drugs can be avoided by not using these products, everyone is subject to fatigue.

A prime example of the results fatigue can produce concerns a U-8 pilot on an administrative flight. This

aviator was in excellent health. Not only was he a highly skilled aviator but also the most experienced in his unit. And that was precisely why he was selected to transport some VIP passengers.

While the weather was not forecast to be the best, it certainly was not considered a threat, especially to a pilot with his experience. The only hitch was that the pilot selected had completed a night cross-country flight earlier that night and had gotten only 4 hours of sleep when he was summoned to fly this mission. Because of the nature of the flight and the VIP personnel involved, he accepted the mission.

The flight to his intended destination was uneventful, and shortly after discharging his passengers, he began his return flight. While en route, he encountered deteriorating weather conditions that under normal circumstances would have posed no special problems for him. However, in his fatigued state, he was unable to cope with the situation and a fatal mishap resulted.

While weather was a definite factor in this mishap, pilot fatigue was the real cause. In fact, this mishap epitomizes the following statement made by LTC David H. Karney, M.D., concerning fatigue:

"Fatigue is a significant hazard in Army aviation. It reduces crewmember efficiency and contributes to reduced performance, poor coordination, faulty memory, slower reaction time and a decline in perceptual abilities. Fatigue can lead to overconfidence, poor judgment, mistakes--even fatal accidents."

The question that logically arises is why experienced aviators accept missions when they know they are physically and mentally exhausted. While we can't get any answers from those who could tell us the most--the ones involved in such fatal mishaps as the one described--we can get the reaction of other pilots assigned to units in which such mishaps occurred.

In one such unit, anxiety and apprehension were found among the pilots. Many of them felt that refusal to accept all scheduled missions--regardless of rest, forecast weather conditions or copilot availability--would adversely affect their Army careers.

Training exercises provide ideal conditions for nurturing a variety of stresses, particularly if the exercises are conducted on a large scale. And it doesn't matter whether they take place in the winter or in the summer. Each type of climate and locale will give rise to its own set of problems that will affect both equipment and personnel. A variety of stresses are the result.

While stresses related to fatigue, the operating environment, to drugs and nutrition, to mission and tasks can become quite formidable, those associated with the emotions can often be the deadliest. A person affected by emotional stress may be the only one aware of its presence. So no help can be given him unless he is willing to make the matter known. Because the causes are usually of a personal nature, the emotionally distressed person is not likely to do this. When you consider the variety of stresses that can be imposed on an individual, and their severity, it is little wonder that, as one study shows, human error has been involved in approximately 80 percent of all Army aviation mishaps. And this percentage has remained virtually constant for 20 years.

Although human error and all the stresses associated with it are extremely complicated matters--far beyond the scope of this article--they must be faced. Any element that is directly or indirectly a key mishap cause factor cannot be ignored. The causes of stresses must be attacked, and those stresses that cannot be avoided must be coped with.

For maintenance errors that result from a lack of knowledge, adequate training, formal and OJT, and ample supervision during the performance of maintenance are the answer.

Human errors that stem from willfully performed wrong acts are considerably more difficult to prevent. Dealing with this problem entails dealing with each individual on a one-to-one basis--a virtually impossible task. For example, no one can control the thoughts, intents, and actions of another individual, especially one who may be flying 100 miles away from his home station. Nevertheless, this problem is a long way from being unsolvable.

The prescription is formulated as a directive and dispensed by the commander under the careful supervision of the safety officer. Its main ingredient is discipline. It is a no-nonsense policy that lets it be known no violations of ARs and SOPs will be tolerated. Any who choose to break the rules will be held accountable to the commander. But for the remedy to be effective, two conditions must be satisfied. The first involves unit SOPs. These must be realistically drafted and strictly enforced.

The second condition requires the active participation of the unit commander, the safety officer, and other key personnel such as the operations officer, the maintenance officer and unit IPs. Their job is to set an example. No safety program can be effective if it is based on a "do as I say, not as I do" attitude. Should disciplinary measures become necessary, the commander should not hesitate to take any appropriate action deemed essential for safety.

The flight surgeon is also indispensible--not only for diagnosing and treating various disorders but especially in the area of prevention. He gives advice on measures to be taken to cope with stresses posed by a particular environment, and he gives personal counseling in matters concerning physical and mental health. He is the one person who can determine whether or not an individual is physically and mentally

capable of safely performing all required flight duties.

Finally, we come to those mishaps caused by what we might term as true or pure human error. How can you keep from making those unintentional mistakes that often cause or contribute to mishaps? The experts shun the implications embodied in this question. And for good reason. There is no simple or pat answer. The fact is everyone is subject to inadvertent error, and everyone makes such errors with regularity. Most do not affect our safety, although some do. Examples are numerous.

The experience of one individual is especially helpful in showing not only the ease with which human error can occur but also to what lengths it can extend. In his daily bathing routine, this individual had established a pattern he followed almost religiously. After removing his outer garments in his bedroom he would go into the bathroom, take off his underclothing, lift the lid to the clothes hamper, deposit his underwear, then proceed with his shower.

All went well until one evening when he had an important business appointment to meet. Because of a fairly tight schedule that day, he was pressed for time and had to get ready in a hurry. Hastily, he followed his established routine by removing his outer clothing before rushing into the bathroom. There, he quickly took off his underwear and without a second thought, lifted the toilet lid and promptly flung the undergarments into the bowl.

His reaction? In his words: "It was a feeling of complete helplessness. The instant the clothes left my hand, I knew what was happening, but I was incapable of doing anything about it. In a split second it was all over, and I just stood there--dumb-founded at my own stupidity."

Translated into aviation safety, we find that types of missions to be flown, number of personnel and aircraft involved, tasks required to be performed and their level of difficulty, along with a "laundry list" of other factors, can pave the way for human error. Therefore, all measures possible must be taken to reduce the possibility of human error from the planning stage to mission completion.

The need for discipline to ensure all ARs and SOPs are strictly followed becomes obvious. Coupled with this is the necessity to make certain that pilots assigned are thoroughly qualified for the missions to be flown. Since either excessive stress or stress of long duration can adversely affect an aviator's performance, every effort should be made to eliminate or minimize all undue stress factors possible. Providing aviators with ample time for rest and relaxation as well as with any conveniences available and encouraging them to get proper nutrition are some of the ways supervisors can help. Making every effort to maintain morale at a high level is another. While these recommendations are simply a starting point, they are invaluable in helping to relieve pilots from unnecessary pressure. They have enough stresses to contend with when they are flying their missions.

Should an aviator have a pressing personal problem and fail to make it known, he becomes a threat to himself and to others. Since this type of situation can arise within a unit, it becomes imperative for supervisory personnel to carefully monitor unit aviators for any change in behavior, personality, mood or attitude. Although the appearance of one or more of these symptoms in some individual should in no way be construed that the individual has a serious emotional problem, it does represent a warning sign that should not be ignored.

Since close associates are usually the first–and sometimes the only ones--to detect such changes in others, cooperation of aviators with each other as well as with their ASO, flight surgeon and their commander is definitely in order.

Bear in mind that despite all that has been said, all stress is not harmful. In fact, a certain amount of it is actually beneficial. In moderation, slight tension or anxiety generally causes a person to become more alert and cautious. It is excessive or prolonged stress that causes problems and which must be combatted.

What standard can be used to determine the measure of success we can expect to attain in eliminating human error as a mishap cause factor? Perhaps the following account of a country lay preacher in the hills of Kentucky can provide the best answer.

Because the people living in this rural area were thinly populated and unable to support the number of churches needed to serve them, a lay preacher voluntarily made his rounds weekly to nearby communities to conduct church services. Usually, his young son accompanied him. On entering a small, weather-beaten church before the service, the preacher stopped, pulled out two quarters from his pocket and dropped them into the alms basin that was placed at the entrance.

After the service, as he and his son were saying their good-byes, an elderly man who helped care for the church approached them. He told the preacher that theirs was a poor community and couldn't offer much, but it was their policy to give the visiting preacher whatever was in the collection plate. With that, he dumped the contents of the alms basin into the preacher's outstretched palm--two quarters.

As the preacher and his son resumed their trek home, neither spoke a word. Finally, the youth turned to his father, and in all seriousness, remarked: "You know, pa, if we had put more in, we would have got more out!"

And that's just about the sum of it.

HAPPY NEW YEAR! To celebrate, I've prepared this "Final Exam" for you, drawing from several areas to help you assess your professional knowledge. Have fun—and good luck in this New Year!

FINAL EXAM

CW2 Gary R. Weiland
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1. An aircraft flying in colder than standard air normally will be lower than the altimeter indicates.

A. True B. False

2. What is the predominant form of ice an aviator may expect to encounter in stratiform clouds when temperatures range from 0°C to -20°C?

A. Rime B. Clear C. Glaze

3. Which type of altitude is defined as the altitude above mean sea level?

A. Pressure B. Absolute C. True

4. While conducting a tactical instrument flight where the only navigational aid is a nondirectional radio beacon (NDB), the slaved gyro compass of your radio magnetic indicator fails. Given the following instrument indications, what is the magnetic course, in degrees, to the NDB?

A. 60
B. 90
C. 120
D. 150

5. In extremely cold climates, it is a good idea to add needed oil to aircraft while the system is hot.

A. True B. False

6. What causes most aircraft maintenance problems in desert operations?

A. Continuous operation of aircraft at high power settings in hot weather
B. Expansion and contraction resulting from extreme variations in day and night temperature
C. Sand and dust

7. Which effect is *not* produced by consuming coffee (caffeine)?

A. Sharper intellect and keener perception
B. Reduced reaction time
C. Hypertension
D. Decreased motor activity

8. Blackout and possible unconsciousness may occur if an aviator is subjected to an accelerative force of 5 Gs for how many seconds?

A. 2 to 3 B. 5 to 6 C. 15 to 20

9. An aircraft's useful load is the difference between:

A. Operating and basic weight
B. Operating and gross weight
C. Empty and gross weight

10. The weight of fuel used in warmup and taxi should be included as part of the takeoff fuel entry on DD Form 365F (weight and balance).

A. True B. False

11. Properly fitted aircrewmember body armor will allow the aviator to support some of the armor weight with his thighs while sitting.

A. True B. False

12. The AN/PRC-90 survival radio set provides voice operation on what frequencies?

A. 121.5 and 243.0 MHz
B. 243.0 and 255.4 MHz
C. 243.0 and 282.8 MHz
D. Only 243.0 MHz

13. A pressure type altimeter with a QFE setting indicates _____ altitude.

A. Density
B. Absolute
C. Pressure
D. True

14. The time entered in the "ETE to ALTN" block of DD Form 175 (Military Flight Plan) is based on flight at:

A. Minimum en route altitude (MEA) for the proposed route
B. The lowest instrument flight rules (IFR) cruising altitude above MEA using the odd-even rule
C. The last cruising altitude

15. An Army aviator's acceptance of an approach clearance for a straight-in landing indicates:

A. Final approach may be begun without first having executed a procedure turn
B. Reported ceiling is suitable for initiating the approach
C. Reported visibility or runway visual range (RVR) is suitable for initiating the approach
D. Both B and C above

16. A pilot may leave a helicopter with the engines operating if all controls are locked and there is an operational requirement to leave the engines operating.

A. True
B. False

17. RVR is the controlling visibility factor when published and reported for a runway.

A. True
B. False

18. The touchdown zone elevation of a runway is defined as the _____ elevation in the first 3,000 feet of the landing surface.

A. Lowest
B. Average
C. Highest

19. Air traffic controllers issue instrument approach clearances based on:

A. Known traffic
B. Weather
C. Weather and only if the procedure is authorized
D. Both A and B above

20. An aircraft climbing at a constant indicated airspeed will be increasing its actual velocity or true airspeed.

A. True
B. False

21. If an aviator suspects he is encountering retreating blade stall, he should reduce power, airspeed and RPM.

A. True
B. False

22. An operator's manual (Dash 10) examination is a component of the Aviator Annual Proficiency and Readiness Test.

A. True
B. False

23. Which mode of flight permits the tactical employment of aircraft under low-ambient light conditions?

A. Night
B. Night Hawk
C. Night Vision Goggle
D. Both B and C above

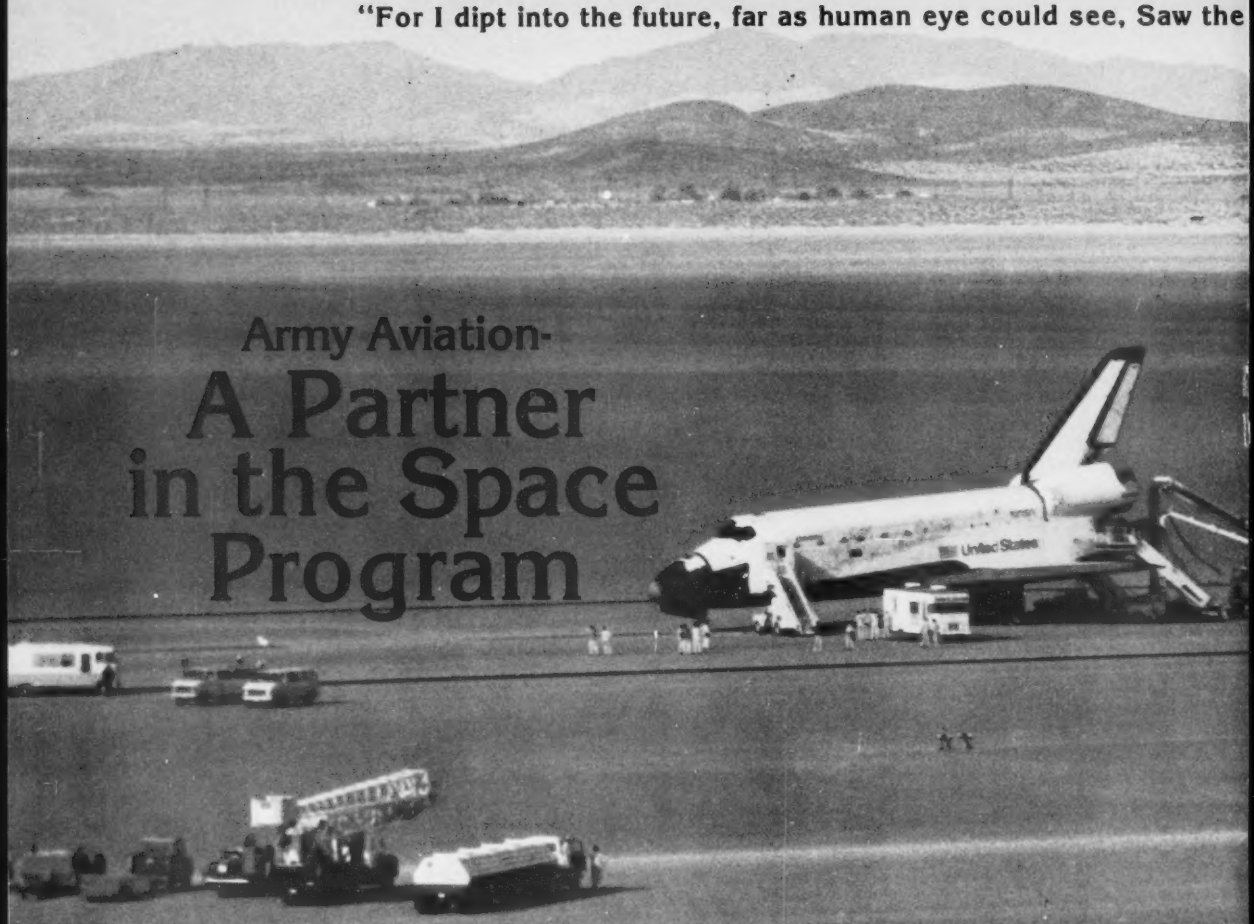
This last question is quite complex and should only be tackled by highly skilled aviators who have, at least, a few thousand flying hours under their belts.

24. An aviator is taxiing out to the active for an IFR departure and observes two flashing red lights and one steady white light at the base of the control tower. What do the lights indicate?

ANSWERS

1. A; FM 1-30, para 2-22d(2)
2. A; FM 1-30, para 9-11d(1)
3. C; FM 1-5, para 2-33d
4. B; FM 1-5, para 15-12
5. A; TC 1-12, page 26
6. C; TC 1-13, page 11
7. D; TC 1-20, pages 1-4 & 1-5
8. B; TC 1-20, page 4-2
9. C; TM 55-405-9, para 6e
10. B; TM 55-405-9, para 32a(10)
11. B; TC 1-62, page 53
12. C; TC 1-62, page 24
13. B; DOD FLIP, General
Planning, page 2-27
14. C; DOD FLIP, General
Planning, para 4-2, item 23
15. C; AR 95-1, para 4-26c(1)
16. A; AR 95-1, para 5-13
17. A; AR 95-1, para 4-26b
18. C; AIM; page S-40
19. A; AIM, para 403a(1)
20. A; FM 1-50, para 3-3b(2)
21. B; FM 1-51, page 2-50
22. A; TC 1-134, para 2-8a(3)(c)
23. C; TC 1-134, para 2-13(c)
24. Soft drink machine is out of grape and orange, use correct change only

"For I dipt into the future, far as human eye could see, Saw the



Army Aviation-

A Partner in the Space Program

WONDERS THAT probably were not in Tennyson's "Vision" crossed the blue California sky with white and green Saturday, November 14, when the Space Shuttle Columbia landed at Edwards Air Force Base.

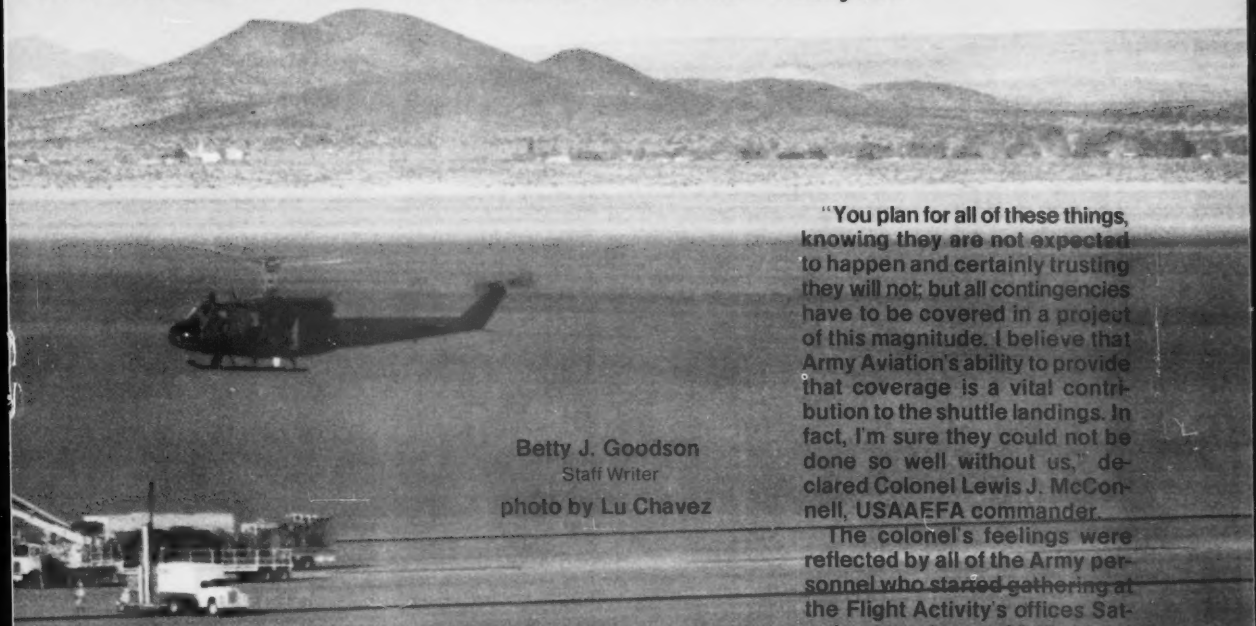
The white was Columbia as it began its descent for a historic second return from space. Applause and cheers from the crowds, estimated at 200,000, were almost equal in volume to the sonic booms that announced the 90-ton craft's approach and subsequent flawless landing on Runway 23 of Rogers Dry Lake.

The green was Army UH-1 Huey helicopters from the Army Aviation Engineering Flight Activity (USAAEFA), Edwards AFB, and the 40th Aviation Battalion, 40th Infantry Division (Mechanized), California Army National Guard, Los Alamitos and Stockton.

Providing an aerial platform for photographic coverage and controlling the crowds as Joe Engle and Richard Truly brought the space shuttle back to earth were the primary missions of the Army Aviation crews and equipment.

Similar support was given for Columbia's first landing in April, and lessons learned from that were applied to preparations for the second touchdown. Chief of those lessons was that more crowd-control measures were needed, according to Major Michael V. Stratton of USAAEFA, officer in charge of the security forces.

"In April we used only two helicopters, and our coverage was stretched too thin. We estimated there were 200 vehicles which tried to reach the orbiter



Betty J. Goodson
Staff Writer
photo by Lu Chavez

after it landed, and many people even started walking across the lakebed. They had to be kept away to prevent their being injured by the toxic fumes and heat and also to protect the shuttle from being tampered with. Unauthorized persons did not reach the shuttle, but there was no margin to spare.

"So when we began preparing for the second landing, we doubled the number of security helicopters. The California Army National Guard provided those as well as jeeps and personnel to further aid in patrolling the public viewing areas.

"Because of the increased security forces, we did not have the problems that we did before."

To fulfill the photographic part of the mission, a USAAEFA Huey carried the camera which transmitted the "NASA select" television signals to all NASA facilities, and which were also made available to commercial television networks as the first close-up pictures of Columbia, rolling to a stop. Those images meant NASA engineers were able to examine the shuttle for any unsafe condition before the ground and decontamination crews arrived. There was also an Air Force photographer on board the UH-1 who took still and motion pictures of the landing operations for Air Force shuttle evaluation requirements.

Army Aviation personnel were on alert for any landing contingencies, on or away from Edwards, with a modified crash-rescue UH-1. It was fitted with a telescoping spray nozzle to be used for fire suppression and as an instant decontamination "wash down" for anyone who came in contact with fuels or toxic substances. That crew was very glad not to be called into action!

In the event the space shuttle had landed away from the lakebed, the Army photo helicopter would have been the only source for real-time video coverage of the rescue and recovery operations. It would also have provided an automatic UHF-VHF radio relay capability between those operations and the command and control elements at Edwards.

"You plan for all of these things, knowing they are not expected to happen and certainly trusting they will not; but all contingencies have to be covered in a project of this magnitude. I believe that Army Aviation's ability to provide that coverage is a vital contribution to the shuttle landings. In fact, I'm sure they could not be done so well without us," declared Colonel Lewis J. McConnell, USAAEFA commander.

The colonel's feelings were reflected by all of the Army personnel who started gathering at the Flight Activity's offices Saturday morning at 0545. Major Charles F. Adam, overall coordinator for the Army support elements, was there to give the final briefings.

USAAEFA members participating were Majors Stratton, Adam and Gary T. Downs; Captains Loran A. Haworth and Richard L. Vincent; Chief Warrant Officer, CW3, James L. Webre; Staff Sergeant Kenneth D. Slater; and Sergeants Cesar Cordero and Sergio C. Leal.

National Guard pilots and crewmembers were Major Lance Fletcher; Chief Warrant Officer, CW4, Mayo Miller; Chief Warrant Officers, CW3, Richard Sharpe, Gregory Helsel, Thomas Murphy, Correll Couch, James S. Gibson and Richard D. Gassler; Staff Sergeant Warren L. Peterson; and Sergeants Leslie Cordera, Charles Robbins and Larry Ake.

Everything, then, was in readiness Saturday, November 14. And when the cloud cover lifted to reveal the blue sky and the incoming white Columbia, the Army Aviation green was there, following its custom of being "Above the Best."

Fully Modernized Cobras In The National Guard

Lieutenant Colonel Jerold J. Jensen
Army Aviation Advisor
Army Advisor Group
Salt Lake City, UT

On 10 April 1981 at the Bell Helicopter Plant, Fort Worth, TX, Major General Van Hixson, Adjutant General, Utah National Guard, accepted the first AH-1S Fully Modernized Cobra helicopter produced for the National Guard. This article is about the National Guard unit which received that Cobra and the hard work and training they accomplished in order to justify their selection as the first recipient.

THE SIGNIFICANCE of an Army National Guard unit receiving a new and sophisticated weapons system like the AH-1S Fully Modernized (FM) Cobra may go unnoticed by the masses, but not so for members of the Attack Helicopter Troop, 163d Armored Cavalry Regiment who view the event as a reward for aggressively training to be ready. With justifiable pride in their accomplishments, this unit has overcome the normally disabling effects of a major reorganization, equipment changes, personnel turbulence, time and monetary constraints to arrive at the forefront of the attack helicopter business.

Operating from the Army Aviation Support Facility (AASF) at West Jordan, UT (a suburb of Salt Lake City), the Troop is located in an ideal environment for attack helicopter training. At the AASF, classroom and other nonfield training is accomplished and aviation maintenance is performed on unit aircraft. Pilot training is conducted at a number of nearby training areas, maximizing productivity from every available training minute. Terrain flight qualification is conducted 10 minutes away at the state owned Camp W.G. Williams training area or at Dugway Proving Grounds.

Helicopter gunnery training is accomplished 4 to 6 times annually on a superb range located 45 minutes flight time away on the western edge of the Great Salt

Four generations of attack helicopters all in operation in the Utah ARNG (left to right): AH-1S (Modernized Cobra), AH-1S (Modified), AH-1G, UH-1M (M-22)

Photograph by SSG Craig Leaper

Lake. All of these training areas are capable of accommodating multiple attack teams and joint air attack teams in battle drill and live fire exercises.

The membership of the organization, like many Reserve Component (RC) units, is drawn from a wide cross section of the civil community. Found within the ranks of the Troop are policemen, carpenters, masons, lawyers, students, and business and community leaders. Although coming from diverse backgrounds, the Soldiers comprising this unit share a common motivation in their desire to serve and to be a part of the best.

Training is the primary ingredient in the glue that binds the unit together. Without a good, challenging training program, no amount of new equipment is worth the individual sacrifice required for membership in this or any other RC organization.

With no higher tactical headquarters immediately accessible (the 163d Armored Cavalry Regiment is located in Montana), the Troop must function independently to plan, organize, coordinate, support and execute an ambitious training plan geared to both individual and collective unit needs.

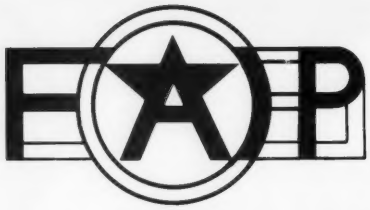
Individual training presents some unique challenges for the Troop because a good many members are prior service Soldiers, Sailors, Marines or Airmen with experience in nonaviation related fields. To deal with this situation, each member is placed on an individualized track, leading to military occupational specialty qualification.

This program is expanded in the case of aviators because it must include the multitude of aircrew training manuals and other required training. Constrained by time and training funds the AASF has been given authority to conduct rotary wing qualification for unit members who already have military fixed wing ratings. Additionally, rotary wing qualified aviators are locally transitioned into the AH-1S series aircraft. This U.S. Army Forces Command approved program was locally prepared and is tailored to the Reserve Component training environment.

Training to become proficient with new equipment and munitions—in addition to keeping pace with changes in doctrine, tactics and techniques—makes for an interesting challenge. The Troop is justifiably proud of its training accomplishments. It has been a forerunner in joint air attack team training with Air Force and Air Guard close air support units. Troop pilots are experienced at firing under all light conditions. They are particularly adept at night firing under their own 2.75 inch illumination rocket and also with artillery illumination fired by Utah Guard units. Training emphasizes operations in a high threat environment where radio communication may be impossible and the ability to communicate by visual signals may make the difference between mission success and failure. Speech security and IFF (identification friend or foe (radar)) equipment are installed in Troop aircraft and are used as a matter of course.

The Troop ventures outside the local training environment whenever possible for combined arms training and thus far has sharpened its skills during multiple Air Force Red Flag exercises, plus others such as JRX Border Star 81 at Ft. Bliss, TX.

With acquisitions of the AH-1S (FM) a major unit goal has been achieved; however, this is not viewed as the end. Rather it is a springboard for total readiness. As long as the requirement exists for a well-trained organization of mounted cavalry, the Attack Helicopter Troop, 163d Armored Cavalry Regiment, Utah National Guard will be there.



an acronym that has to be earned

First Lieutenant Edward F. Schauberger
and
First Lieutenant Jeffrey S. Alderfer
United States Air Force
3588th Flying Training Squadron
Fort Rucker, AL

FAIP IS NOT a four-letter word. It is an Air Force acronym for a first assignment instructor pilot. This is an individual who, upon graduation from flight school, remains there to become an instructor. Although a common occurrence in the Air Force, where a large percentage of fixed wing instructor pilots are FAIPs, this is relatively new to the Air Force helicopter world—with only five at this writing. The Air Training Command's 3588th Flying Training Squadron (FTS) at the U.S. Army Aviation Center, Ft. Rucker, AL, has been using FAIPs for about 4 years.

The mission of the 3588th FTS is broad and multifaceted. Squadron personnel monitor Air Force students through the Army Initial Entry Rotary Wing (IERW) program and rotary wing qualification course, conduct Air Force unique flight training, provide administrative assistance to Air Force students and serve as their sponsors and advisors. A close association is maintained with the Army Aviation Center's director of training and doctrine to assure the continued quality of academic and flight instruction. Of the 20 permanent party personnel assigned to the squadron, 15 are instructor pilot (IP) qualified.

Air Force students come to the 3588th in the last month of their IERW program to learn those procedures unique to the Air Force. Ninety-seven were graduated in fiscal year (FY) 1981 with a like number expected in FY 1982.

Being selected to remain at Ft. Rucker as an Air Force IP involves a great deal of work. The student must have a good record in flight school, express a strong desire to stay at the Army Aviation Center, and have a positive attitude and disposition. FAIPs are selected very carefully from among the numerous volunteers, and only the most promising prospective pilots are offered the opportunity to return to Ft. Rucker as instructors. After graduation, IP selectees begin the additional training to prepare them to upgrade to instructor pilot status.

Advanced helicopter training begins with a tour at the 1550th Aircrew Training and Test Wing at Kirtland AFB, NM, at the Military Airlift Command Instructor Pilot Lead-In Course. During their stay, prospective instructors fly as observers on syllabus training flights in each type helicopter the Air Force owns and operates at Kirtland. Those flights are not to gain proficiency but to help them understand how the Air Force uses helicopters and what their future students must be ready to learn.

The next stop is at Fairchild AFB, WA, for land and water survival. If the FAIP is an Air Force Academy graduate, the land survival already will have been completed and water survival training is done at Homestead AFB, FL. Upon completion of survival training, it's back to Ft. Rucker for the flying and instructional phases of the upgrade program.

Army contact program of instruction (POI) is first and presents a real challenge. POI is 25 hours of concentrated and demanding instruction conducted by a professional and experienced staff of Army aviators. FAIPs are required to fly the UH-1 Huey from the left seat and concurrently analyze the maneuvers verbally so as to become comfortable with the increased visibility from the left seat and to gain additional confidence. Emergency handling is stressed, as the POI instructors don't hesitate to simulate an engine failure at just the "right" moment. Many inflight problems, whose solutions become second nature, are included. The instructors

First Lieutenant Brian K. Livie, below right, an Air Force FAIP at the Army Aviation Center, Ft. Rucker, AL, goes over a UH-1 Huey preflight list with two Air Force students, Second Lieutenants Robert E. Hawvermale, left, and Paco F. Burrell

Helicopter procedures unique to the Air Force are taught to students of that service in the last month of flight training at the Army Aviation Center, Ft. Rucker, AL, by Air Force instructor pilots. First Lieutenant Edward F. Schauberger, at right (foreground), is a FAIP (first assignment instructor pilot). Second Lieutenant M. A. Stank is the student

photographs by SP4 Glenn A. Ogle

also play the student role and emphasize the unexpected things a student might do.

The academics cover the Huey systems and give a good background in instructional techniques. FAIPs come away from contact POI with a solid foundation and a fair assessment of their own capabilities.

Air Force upgrade encompasses contact, instruments, remote area operations and formation procedures. The pace is quick but is geared to the individual. The program ends with an Air Force Review and Certification Board conducted in the 3588th FTS by the commander and other instructors. Successful completion of upgrade results in a rating as an Air Force helicopter instructor pilot.

The majority of a FAIP's work lies in teaching Air Force instrument procedures while sharing the busy airspace of the Ft. Rucker instrument training area with the Army instructors and students. Air Force instrument procedures differ slightly from the Army's, and it is sometimes difficult to maintain and conform to two sets of regulations.

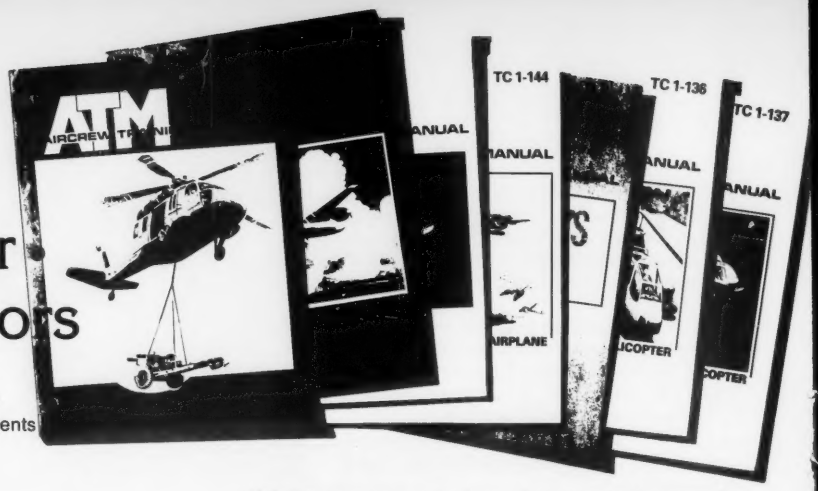
The first day on the flight line at the Army Aviation Center is met with a little anxiety, and it helps to have an understanding student. A FAIP has to set some ground rules and establish some credibility with the student because the instructor is flying with age group peers and has little rank or extensive experience to claim as an advantage.

In addition to flying duties, many of the squadron IPs are academic instructors and also perform various squadron functions. Each IP sponsors an Air Force class going through the Army Aviation Center flight school. This is found to be a very rewarding experience and enriches students' training and the instructors' understanding of the students' activities.

Other rewards for a FAIP at Ft. Rucker are many. This is one of the few positions where Air Force officers can interface with another branch of the service. It gives a firsthand look at Army organization which may prove helpful in any future joint service exercise or endeavor.

Being an Air Force FAIP is a very positive and practical experience. Instructing is often tiring and exasperating, but always rewarding. Like other instructors at the Army Aviation Center, the Air Force FAIPs take pride in being "Above the Best."

Developing a Training Program for Army Aviators



Major William T. Carter
Directorate of Training Developments
U.S. Army Aviation Center
Fort Rucker, AL

THE TITLE "aircrew training manual" (ATM) is common to a series of training circulars headed by TC 1-134, ATM: "Commander's Guide," which gives administrative instructions on all aviation-related training for Army aviators. Other manuals in the series provide specific training and evaluation requirements, each targeted to a particular type of helicopter or aircraft.

The ATM came about as a result of the Department of the Army (DA) recognizing a need to relate aviator combat readiness flying (CRF) with unit readiness. A panel consisting of representatives from major Army commands who were considered experts in aviation training was formed in 1976. It was chaired by Brigadier General Charles E. Canedy, aviation officer, Office, Deputy Chief of Staff for Military Operations, and was known as The Blue Ribbon Panel. It tasked the Infantry, Armor, Transportation, Intelligence and Aviation Schools to analyze the present-day aviation employment doctrine and to submit a proposed tactical and mission task list for the various aircraft systems. The panel combined that input and formulated a task list for each system, consisting of basic aircraft tasks, tactical/special tasks and mission tasks. Based on that, the U.S. Army Aviation Center at Ft. Rucker, AL, was told to develop a TASK, CONDITIONS, STANDARDS list to be used in a preliminary validation by the 6th Air Cavalry Combat Brigade (ACCB) at Ft. Hood, TX, beginning 1 March 1977.

Using the results from the preliminary validation, the first ATMs were published as "test" manuals in October 1977. In February 1978, DA appointed the Aviation Center the overall proponent for the ATMs with the responsibility to write, publish and monitor them. The other schools were to furnish tactical task requirements based on the employment role of the aircraft systems.

With improvements based on a year's experience in the field, the manuals were completely rewritten and a second draft was printed in October 1978.

Final improvements were incorporated and the DA-approved manuals were printed and distributed in late 1980 and early 1981. As new doctrine, equipment and just better ways of doing things are recognized, they will be included in revisions of the manuals.

The ATM standardizes aviator training throughout the Army. It provides criteria for unit commanders to consider when they evaluate unit training status. When used with the Army Training and Evaluation Program (ARTEP), it provides commanders with the tools necessary to relate individual aviator training with unit mission training, thus allowing them to allocate resources most efficiently to achieve readiness. Although the ATM standardizes aviator training, commanders are given discretionary authority over about one-third of the tasks.

Use Of ATMs. How can unit commanders develop aviator training plans which are valid, use resources efficiently and are realistically attainable (a very important consideration)? To do that, a systematic approach is essential. A system that has worked for me uses five different steps. Keep in mind that I am not suggesting commanders must personally do all of this. The unit's entire chain of command should be involved, but the commanders are the leaders and must fully participate. I have arranged the wording to produce the acronym METER—it stands for:

- Mission analysis
- Evaluation of current capabilities
- Training shortfalls listed and prioritized
- Establish short-range and long-range goals
- Resource requirements and constraints considered

Mission Analysis. The ARTEP is the primary source for unit mission tasks. The TOE (table of organization and equipment), command guidance, contingency plans and geographic location all must be consulted and considered. All unit leaders must be thoroughly knowledgeable of their missions. If you are not confident that this is true, then you might consider it as a topic for your leader development training program. Also, this is a good place to mention that your tactical standing operating procedure (TSOP) should complement the above documents.

Now that the missions are fully understood, the analysis continues to determine what individual unit members must be proficient at doing. Naturally, this should include all unit personnel; but I will limit my discussion to aviators. One technique is to assemble all aviators (large units may want to break down into groups), write the missions on a chart, and challenge the aviators to identify every task necessary in the performance of the unit mission. Write all the tasks on the chart below the unit mission. Continue this process until all unit missions have been analyzed. When this is complete, begin with the first mission and determine which aviator duty position(s) is associated with that mission.

With such an analysis, the commander can easily designate Flight Activity Category (FAC) 1 and FAC 2 positions. The results are posted to each aviator's "Aircrew Training Record" as appropriate; and in accordance with TC 1-134, those tasks become mandatory for the aviator. The benefits of this approach are obvious. Besides being a learning experience for everyone, it takes advantage of the collective knowledge and experience of the aviators and assures enthusiastic support for the training program.

Evaluate Current Capabilities. This may be the most difficult and subjective element of the process. The natural tendency to be critical of everything may result in wasting training resources on areas where no training is needed. Consequently, this will leave less time and fewer resources to spend in areas where training is most needed.

Using the charts where aviator tasks are related to the unit mission tasks, evaluate the unit's collective aviator strengths and weaknesses in each task listed. Assign a plus (+) value where a task is rated as a strength and a minus (-) for a weakness. Individual prejudices should be guarded against. For example, some may want to downplay the importance of a task such as tactical instruments. The relative importance of a task is best left until later, as priorities are listed.

Training Shortfalls Are Listed And Prioritized. The results of the above process should be recorded and priorities established. At this point, the commander must integrate other aviator training requirements such as continuation training for Aviation Readiness Level (ARL) 1 aviators and mission training for ARL 2 aviators.

Establish Short-range and Long-range Goals. It is absolutely essential that an organization have realistic goals. They must be clearly stated, and known and understood by organization members. Short-range goals should concentrate on getting the most combat readiness for the least expenditure of training resources. Long-range goals should maintain and improve readiness.

To be effective, the goals must be attainable. A short-range goal might be: Achieve aviator readiness C-rating of C-1 within 90 days. Since this requires that at least 85 percent of MTOE-required aviators be ARL 1, personnel turnover may make this impossible in that timeframe. You may want to modify this goal to a short-range goal of C-2 and a long-range goal of C-1 within 180 days.

Resource Constraints Must Be Considered. While your training plan should be challenging and ambitious, it must also be attainable under forecasted conditions. Most essential is a careful comparison of flying hours, instructor pilots, firing ranges, ammunition, expected aircraft availability, etc., with estimates of those requirements to accomplish your training plan. Shortfalls do not necessarily mean changing the plan. Your higher headquarters may be able to help. In any case, your capabilities and limitations will be recognized.

Summary. In summary, you can see that aviator training does not end with the ATM. A vital link between the ATM and good aviator training programs is provided by unit commanders and their training staffs. It is only at this level that decisions about priorities and unique unit requirements can be dealt with. There are probably many different approaches to aviator training that are as good or better than the foregoing; however, I feel that any system that does not involve the aviator in the development process is not going to produce optimum results.

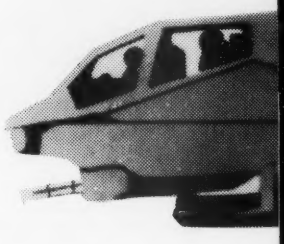
Editor's Note: Mr. Jim Patton, Training Literature Division, Directorate of Training Developments, Ft. Rucker, AL 36362, AUTOVON 558-4619/4588, is the point of contact for questions and/or comments about the ATMs.

AIR TO AIR

Radical concepts or ideas normally are met with severe skepticism or rejected immediately because people are not comfortable with uncertanties. Some time ago—a colleague and good friend—Captain Carl Daschke and I began working on a think paper to be presented for whatever conceptual value it might hold for combat development requirements. Unfortunately, Captain Daschke was reassigned before extensive work could be done. Some of his ideas, in conjunction with my own convictions, remained on numerous draft copies and scraps of paper. This article reflects those ideas on an air-to-air helicopter and one possible manner in which it can be used. I am not convinced the concept this article presents is the ultimate solution to the question of helicopter air-to-air. I do believe it will stimulate thought in not only the aviation community, but also within the Army's branches and in the other military services.

the FIGHTER/INTERCEPTOR HELICOPTER

A CONCEPT FOR TODAY AND TOMORROW



Major Frank E. Babiasz
Threat Branch
Directorate of Combat Developments
U.S. Army Aviation Center
Fort Rucker, AL

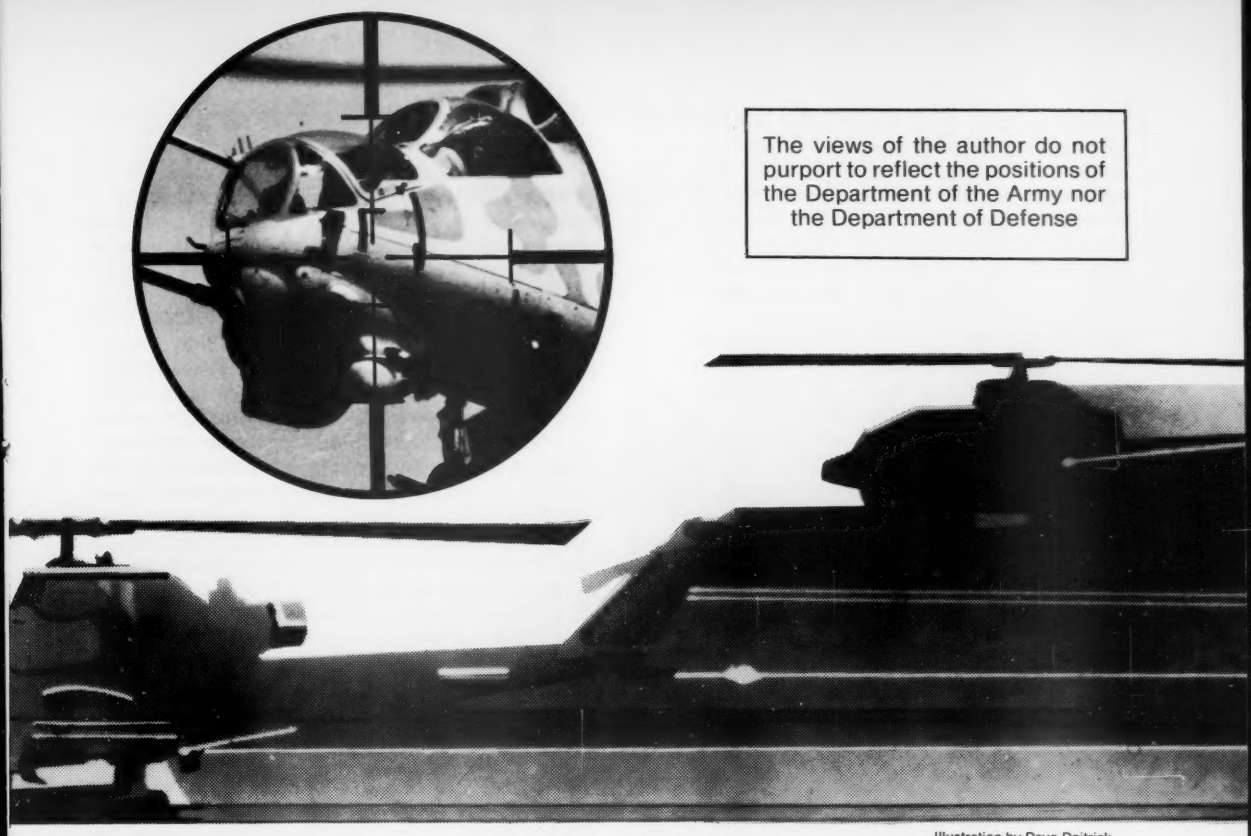
AIR-TO-AIR WARFARE historically has belonged to the U.S. Air Force and undoubtedly will continue to be an Air Force role in the future. However, the possibility of helicopter air-to-air engagements continues to loom and to be the subject of ongoing controversy and misunderstandings. It is time not only to dispel the controversy and misunderstandings; it is time for the aviation community to develop the needed concepts and tactics for the helicopter to fight the air-to-air role as part of the combined arms team.

Before discussing that role, it is necessary to address the threat. Where tactical aviation is concerned, it comes in many forms: air defense, artillery, surface-to-air missiles (SAMs), etc. Numerous articles published in the ***Aviation Digest*** over the past year have explained in detail their significance.

While not discounting this threat, I will focus only on the Soviet attack helicopter and Soviet high performance (HP)/close air support (CAS) aircraft, for it is here that the air-to-air threat to our helicopters lies.

First, assume that all Soviet armed helicopters (Hind and Hip) and all Soviet high performance close air support aircraft, because of their known onboard ordnance, have the technological capability to destroy U.S. helicopters. This fact is undeniable. But destroying U.S. helicopters is *not their primary mission.* Both armed helicopters and HP CAS aircraft are tasked with providing close air fire support for tactical ground operations. As such, they represent a serious threat to the armor and infantry forces that U.S. tactical aviation supports. Accordingly, helicopters working closely with these ground elements become part of the target array. Employment of helicopters near the forward line of own troops (FLOT) places them in a target area subject to air attack; hence, the air threat to U.S. Army tactical aviation.

How will U.S. ground forces counter the Soviet air threat? To answer, let's look at how we are arrayed on the battlefield. Using the active defense, we plan to fight a battle along a wide division front (50 to 70 kilometers). This is accomplished by the use of company and battalion battle positions which contain a mixture of tanks, infantry fighting vehicles/improved TOW vehicles and aviation. To defeat the air threat, they will depend on their organic weapons such as antiaircraft machineguns (i.e., 50 caliber) and short range SAMs. These systems have limited capabilities. The antiaircraft machineguns have limited range; gunners must optically acquire and track the target, and they



The views of the author do not purport to reflect the positions of the Department of the Army nor the Department of Defense

Illustration by Dave Deitrick

are minimally effective against sophisticated aircraft. As for the Redeye/Stinger SAM, although it possesses an infrared homing device, gunners must first optically acquire targets. Its use on the dirty battlefield from a position being targeted with artillery, including smoke, will be extremely restricted. Additionally, both Soviet helicopters and fixed wing aircraft will attempt to maintain maximum standoff range.

Regarding the division level short range air defense systems, we again lack a sufficient number of systems to be totally effective. For example, our current force structure demands that the 50 to 70 kilometer division front be protected by the division's air defense battalion which is composed of eight Chaparral and eight Vulcan systems. This gives us 32 Redeye teams and 16 Vulcan and Chaparral systems over a broad front to protect our forward ground forces and the associated tactical Army Aviation. Compare this to the Soviet's 120 SA-7 Grail missiles, 16 ZSU-23-4 antiaircraft guns, 16 SA-9 Gaskin surface-to-air missile systems, and 20 SA-6 Gainful or SA-8 Gecko missile systems over a 15 kilometer attack frontage. I, and many others, believe in this critical area, U.S. forces are severely lacking.

As for our aviation assets, we fare no better than do our ground forces. Our fielded systems (AH-1 TOW Cobras and OH-58 Kiowa scouts) do not possess an effective antiair system. I believe that cries of "chance encounter" will not be the norm on either today's battlefield or that of the future. The Soviets have placed great emphasis on close air support in recent years, especially in the attack helicopter field. It seems that sheer numbers alone support the opportunity for frequent encounters between U.S. helicopters and Soviet CAS aircraft. Present tactics encourage evasive action should. U.S. helicopters be spotted by enemy aircraft. This, of course, will dictate that we temporarily abort our primary mission until the air threat subsides. Such mission abort procedure can have immediate effects on the ground commander's battle plan.

Of course, there is the Air Force. But, the Air Force is badly outnumbered and will have its hands full trying to establish local air superiority. This mission will be further complicated by the fact that NATO (North Atlantic Treaty Organization) airfields will be among the Soviet's high priority targets. The fighter/interceptor helicopter (F/IH) meets this challenge.

First, I will define a fighter/interceptor helicopter: I envision this aircraft to be a modified version of the AH-1 Cobra. It will have extensive avionics, to include the ability to operate day and night, in all weather

conditions and, most importantly, contain an air intercept radar. As for armament, I recommend a 30 millimeter nose gun for "close encounters," two Aim-9 Sidewinders (which have been successfully test fired from Cobras by the U.S. Marines), four to eight air-to-air Stinger missiles, and a 2.75 inch flechette rocket on each outer pylon. Also, if payload permits, a larger fuel capacity for extended loiter time is needed. The front seat will need a heads-up display and would provide for the gunner with the back seat for the pilot.

The bottom line is that Army Aviation could not only protect itself but also could function as part of the division's air defensive assets. Additionally, we also could complement the Air Force by periodically establishing our own air superiority, at the lower flights levels, as we are highly capable of operating *under* the Soviet's air defense umbrella. This is a function the Air Force cannot do well. A helicopter, equipped in the manner I described, will accomplish three significant missions: (1) Protect our antitank helicopters from the Hind and other air threats; (2) augment the division's air defense capability; and (3) complement the Air Force in the ability to maintain local air superiority. Other advantages to this type of system are that it provides:

- The most mobile Army air defense system ever devised that is directly responsive to the ground commander.
- A helicopter platform which is fast, elusive and—able to hide, strike and hide—unlike present air defense systems.
- Helicopters which when specifically armed for air-to-air missions are the best systems for countering enemy helicopters.
- Friendly heliborne operations security from enemy air interdiction.
- The ground commander a system that can rapidly counter enemy rear area heliborne operations.

Up to this point, I have described the threat, suggested a means to counter that threat, and stated how the F/IH would benefit not only Army Aviation but also division air defense and the Air Force. I now will describe F/IH tactics.

First, I foresee little change in the area of operations in which tactical aviation would be employed. In order to protect our antitank helicopters we must be away from, yet close enough to, the ground forces to provide air defense coverage. This is not a problem because our current employment techniques place us near the ground forces. Additionally, our employment near the FLOT places the F/IH in the area we can expect to see Hinds, Hips and HP CAS aircraft attacking. Even our flight mode, whether contour or nap-of-the-earth, will basically remain the same. Additionally, it must be stressed that our mobility, speed and maneuverability make the helicopter an ideal platform for an air-to-air system. There were a lot of grumbles in the late 1950s when Army Aviation started experimenting by placing various types of armament on helicopters. By now many of those disbelievers have either joined the ranks of the believers or have faded away.

Finally, I will address where and how the fighter/interceptor helicopter fits into our present force structure and its primary mission. As I stated earlier, it will augment the division's air defense systems; therefore, it should be part of the air defense battalion. The aviation battery would contain six F/IH aircraft and operate in teams of two during tactical operations. Limited maintenance would be performed by the battery support personnel, with any major repairs going to the division aviation battalion's maintenance company. As an integral part of the division's air defense assets the F/IH would have the primary mission of local air defense in support of ground operations. In addition to its own onboard radar, the F/IH would be tied into the air defense radar network. Therefore, it could be used to immediately reinforce any area where the air threat is of paramount consideration. Remember, the F/IH's airspeed (in excess of 200 kilometers per hour) allows it to be onstation within minutes, even when the division occupies a wide frontage.

A secondary mission of local air superiority could be dictated by the division commander. Using all six F/IH aircraft onstation simultaneously would provide sufficient firepower, in conjunction with other systems, to clear the lower flight levels (3,000 feet and below) of hostile aircraft for limited periods.

Another mission would be the protection of the division's AH-1 TOW Cobra and OH-58 scout aircraft. This mission too would be based on the division commander's perception of the air threat to the attack helicopters. As I would endorse future scouts to be armed with air-to-air systems for attack team self-defense, the F/IH could augment the scout's capability as well.

Army Aviation is a recognized part of the combined arms team, but Army Aviation has more to offer. We must continue to be innovative. Yes, I have read of suggestions advocating the XV-15 VSTOL (vertical short takeoff and landing) and the Air Force OV-10 Bronco as a Hind killer. I believe some of these proposals have merit. However, I am firmly convinced that the helicopter has more advantage in combating any slow speed or HP CAS air threat than either of these two systems. The services and branches of services must set aside historical roles they sacredly consider their own and plan for the future. It is only through innovative means that we can not only meet the threat but also defeat it.

REPORTING FINAL

Late News From Army Aviation Activities

FROM FORT RUCKER

40th Birthday. The 40th anniversary of Army Aviation and Ft. Rucker will be celebrated 3 to 6 June 1982. A wide range of events is planned, and details on the schedule will be announced soon. ***Plan now to attend.***

10th Birthday. Army Aviation's only altitude (Hypobaric) chamber has been in operation 10 years, and 16,881 students have been trained in it.

Operated by the Physiological Training Services, Aeromedical Activity, Army Aeromedical Center, the chamber, which is a 10 × 25-foot specially equipped block house, simulates a reduction in pressure at higher altitudes. The training stresses the recognition of symptoms of hypoxia that the student aviators feel, as well as acquainting them with what happens when they ascend to altitudes above 10,000 feet and then return to ground level.

Graduation Speakers.

• Lieutenant General Julius W. Becton Jr., deputy commanding general for training, Army Training and Doctrine Command, Ft. Monroe, VA, spoke to graduating members of the Warrant Officer Senior Course in November.

"Warrant officers have proven themselves a necessary and vital part of our United States Army; however, . . . recognition of warrant officer contributions has been, for the most part, minimal," General Becton said. That condition is being changed, though, because the Army has made a new commitment to its warrant officers that has resulted in improved personal and professional growth, compensation and recognition.

• Major General John W. Woodmansee Jr., deputy commanding general, V Corps, U.S. Army Europe, addressed two graduating aviator classes recently.

"Army Aviation of the 80s and 90s will be one of the most important arms in the U.S. Army," he said, telling the graduates that they will be on the forward edge of technology as field personnel and will benefit from the new armament and weapons systems being used in Army Aviation.

(USAAVNC-PAO)

FROM FORT BRAGG

The Golden Knights Want You. The Army Parachute Team, the "Golden Knights," needs qualified warrant officers to pilot the team's YC-7A Caribou and U-21 Ute aircraft. Applicants should have 500 hours military multiengine fixed wing time and a current fixed wing instrument qualification with 100 hours of instrument time.

A 3-year assignment to the Golden Knights involves extensive flying and travel throughout the United States as a personal representative of the Army, thus requiring the highest standards of military bearing and appearance.

Interested aviators who are eligible for reassignment and who have at least 3 years of retainability should contact Major James H. Correll II, AUTOVON 236-4800/4828, or Captain Bob Ozbolt, AUTOVON 237-6638, or write: Commander, U.S. Army Parachute Team, Box 126, Ft. Bragg, NC 28307.

FROM FORT CARSON

MAST Award. The 571st Medical Detachment, commanded by Major Richard C. Bulliner, has received the Wright Brothers Foundation Memorial Award for the assistance it has given the civilian community during the past year. Recognition of the MAST (Military Assistance to Safety and Traffic) work occurred during the 12th annual Colorado Aviation Hall of Fame banquet.

In the 12 years it has been organized, the detachment has flown more than 2,100 missions, ranging from aiding stranded hikers to airlifting premature babies. **(4th INF DIV PAO)**

FROM GERMANY

Award Time For Dustoffs. Six years of accident-free flying (1975 to 1981) have earned the 421st Medical Company (Air Ambulance), Nelligen, Germany, the most prestigious air-safety award granted by the Department of the Army.

The DA Award of Excellence was presented at a November ceremony in Stuttgart to Lieutenant Colonel Walter L. Berry, 421st commander, by Major General Floyd W. Baker, commander of the 7th Medical Command.

Represented by the Award of Excellence are 44,786 hours flown to evacuate medical emergencies and to move medical people, equipment and supplies, in the support of field training.

(7TH MED COMD PAO)

PEARL'S

Personal Equipment And Rescue/survival Lowdown

Debbie Bacle

Photograph by Tom Greene

Emergency Locator Transmitter

Use of emergency locator transmitters (ELTs) in Army Aircraft is a continuing matter of concern that is growing rapidly in the aviation community. As outlined in PEARL in last month's issue of the ***Aviation Digest,*** each aviation unit should evaluate its respective need for ELTs and forward its request for use of these items, with justification, through the appropriate chain of command to CDR TSARCOM, ATTN: DRCPO-ALSE.

More SPH-4 Adhesive Problems

More problems have surfaced regarding the adhesives used in the reapir of the SPH-4 flight helmet. In particular one adhesive, national stock number (NSN) 8040-00-753-4800, which is used to install the replacement energy absorbing liner, seems to be causing the most difficulty. This two-part epoxy is apparently too strong and too persistent; once used, it cannot later be removed without damage to the fiberglass helmet shell, consequently rendering the entire helmet unserviceable. Natick Laboratories (NLABS) is working on the selection of a new adhesive which will be established in the supply system and which will be reflected in a change to TM 10-8415-206-13, "Operator, Organizational, Direct Support Maintenance Manual for the Helmet, Flying, Protective, Model SPH-4." In the meantime, to resolve the immediate problem, it is suggested that one of the following two adhesives be used: Part No. 45748, manufactured by the Swift Adhesive Company, 4615 So. West Freeway, Suite 605, East Houston, TX; or Part No. 45748, Code 97427, Gentex Corporation, P.O. Box 315, 8th Ave., Carbondale, PA. Both of these adhesives are of a water base and are easy to remove when necessary. Both may be ordered from S9T. Point of contact (POC) for further information is Mr. H.A. Tetreault, TSARCOM Directorate for Maintenance, AUTOVON 693-3171 or Commercial (314) 263-3171.

If you have a question about personal equipment or rescue/survival gear, write PEARL, DARCOM, ATTN: DRCPO-ALSE, 4300 Goodfellow Blvd., St. Louis, MO 63120 or call AUTOVON 693-3307 or Commercial 314-263-3307

Decompressed Trioxane (Again)

In the January 1979 edition of PEARL we reported a very serious problem having to do with the fuel, compressed trioxane, NSN 9110-00-263-9865, a component of Army aircraft survival kits. Apparently the same problem still exists. If the foil wrapper containing the fuel bar is punctured, the fuel turns to a white or blue powder and spreads throughout the survival kit, contaminating everything else contained in the kit. Trioxane fuel is composed primarily of metaformaldehyde, which is highly toxic and if ingested constitutes a medical emergency. Since the inner case of the survival kits contains water, rations and eating utensils, the probability of inadvertent ingestion of trioxane residue is high. Due to the seriousness of this matter, it is strongly suggested that all Army survival kits be subjected to an immediate one-time inspection for trioxane fuel residue. If any such residue is found, the trioxane bars should be removed and the kit cleaned in accordance with TM 55-1680-317-23&P. All trioxane fuel bars should be inspected for punctured foil wrappers; those with punctured wrappers are unserviceable and should be replaced. When trioxane bars are repacked in the survival kits, they should be sealed in ziplock bags, NSN 8105-00-837-7755, to prevent future contamination. (Thanks to CW2 Charles Gibson, U.S. Army Safety and Standardization Board, USAREUR, for this info.)

New ALSE Checklists

Checklists, including complete preflight and calendar inspection procedures, are now available for all survival kits used in Army aircraft. They are obtainable through normal publications supply channels under the numbers listed below:

TM 55-1680-317-CL-1
Individual Hot Climate Survival Kit
NSN 1680-00-973-1861

TM 55-1680-317-CL-2
Individual Cold Climate Survival Kit
NSN 1680-00-973-1862

TM 55-1680-317-CL-3
Individual Overwater Survival Kit
NSN 1680-00-973-1863

TM 55-1680-317-CL-4
SRU-21P Aircrew Survival Vest
NSN 8465-00-177-4819

TM 55-1680-317-CL-5
OV-1 Aircraft, Hot Climate Survival Kit
NSN 1680-00-148-9234

TM 55-1680-317-CL-6
OV-1 Aircraft, Cold Climate Survival Kit
NSN 1680-00-148-9233

TM 55-1680-317-CL-7
OV-1 Aircraft, Overwater Survival Kit
NSN 1680-00-140-3540

TM 55-1680-317-CL-8
OV-1 Aircraft, Survival Vest
NSN 1680-00-187-5716 (Small)
NSN 1680-00-205-0474 (Large)

All of these publications are dated 24 August 1981.

Many thanks to Mr. James Dittmer, TSARCOM Directorate for Maintenance, whose tireless efforts made these checklists possible.

Questions and Answers

We recently ordered and received several of the training devices, blind flying hood, channel vision, personnel, NSN 6910-00-608-7137, as listed in Department of the Army (DA) Pamphlet 310-12, "Index and Description of Army Training Devices." Unfortunately, these items do not fit the SPH-4 flyer's helmet as they are supposed to, and consequently do not suit our needs. What do we do with these hoods and how can we get the kind we can use with the SPH-4? (Becky Barber, USAR Aviation Support Facility, No. Syracuse, NY)

Obviously, DA PAM 310-12 is in error. The item listed therein is *not* the correct blind flying hood for use with the SPH-4 helmet; it is, in fact, for use with a baseball-type cap. The correct piece of equipment for use with the SPH-4 is the hood, blind flight, NSN 6910-00-525-8199, which is available from B17 at a cost of $6.09 each. In addition, action has been taken to delete the incorrect item from the DA pamphlet. As for what to do with the hoods you have already received, treat them as you would any other items—if you can't use them, turn them in. POC at this office is Mr. Tommy Vaughn, AUTOVON 693-3307 or Commercial (314) 263-3307.

THREAT

CW4 Richard A. Davis
B Co., 15th MI Battalion
Fort Hood, TX

"Victory in present day warfare will go only to the side that has completely mastered its weapons and equipment and the art of waging war, and also possesses high moral and fighting qualities."

Lt. Gen. A. Dunin of
The Soviet Tank Forces

HELICOPTERS - the Soviet View

DURING 1978, THE United States became concerned over the rapid buildup of the helicopter fleet in the Union of Soviet Socialist Republics. It was discovered that the Soviets had doubled their force during 1977; expanded their helicopter fleet three-fold as of June 1978; and were expected to continue. By early 1980 they were able to build more helicopters than the U.S. Army will build during the entire span of the AH-64 Apache and UH-60 Black Hawk programs.

In 1978, Anthony R. Battista, head of the House Armed Services Research and Development Subcommittee staff, noted that helicopters represented the last area in tactical weaponry in which the United States held a production lead over the Soviets (figure 1). *They have an annual production capacity of 1,600 helicopters and were expected to increase annual production (however, some sources indicate production has declined some since 1978).*

During and just after World War II, the Soviets found that using air power during a combined arms offense brought success. However, it wasn't until successful helicopter operations in Southeast Asia and the Mideast wars that they started to take a long, hard look at helicopters. It is believed that many experiments, tests and exercises, with many strap-on kits on older aircraft, were tried before the Mi-24 Hind was introduced into operational units (figure 2).

FIGURE 1: Relative production rate estimates (United States/Soviet Union)

	U.S. 1972-74 Average	U.S.S.R. 1972-74 Average	USSR/US 1972-74 Average
Tanks	462*	3,000	6.5:1
APC	860	4,400	5:1
Artillery	170	1,200	7:1
Helicopters	920	710	1:1.3
Fighters	540	930	1.7:1
Transports	0	10	
Submarine Diesel Power	3	5	1.7:1
Surface Ships	11	39	3.5:1
Soviet Submarine Nuclear Power with Ballistic Missile	0	6	

* Includes 475 M60A2 retrofit in 1973-74. Average M60A1 production was 303 per year.

Glossary

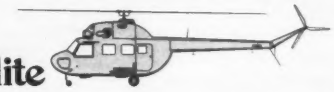
AAH	advanced attack helicopter	ESM/ECM	electronic warfare support measures/electronic countermeasures	NATO	North Atlantic Treaty Organization
ADF	automatic direction finder	ft	feet	NBC	nuclear, biological, chemical
AL	Alabama	kg	kilograms	R	Republican
APC	armored personnel carrier	km	kilometers	SAS	stability augmentation system
ATC	air traffic control	lb	pound(s)	SHP	shaft horsepower
ATGM	antitank guided missile	LTG	lieutenant general	SSBN	nuclear powered ballistic missile submarine
BRDM	Soviet Combat Reconnaissance Vehicle	m	meters	TV	television
COL	colonel	mi	miles	U.S.	United States
		mm	millimeters	USSR	Union of Soviet Socialistic Republics
		mph	miles per hour		

MONTHLY WRITING AWARD

Mi-1 Hare

The first mass produced helicopter designed by the Soviets was the Hare (same as Polish SM-1). It was designed by M.L. Mil (December 1947) and flew its maiden flight in October 1948. By the mid-1950s, it was operational in frontal aviation units.

Mi-2 Hoplite



With the advent of the turbine-powered aircraft, the Soviets saw a need to use this new technology and developed the Hoplite with two 400 SHP turbine engines. The Hoplite made its maiden flight during August 1965. It didn't appear to be capable of carrying armament; however, several have been seen with antitank missiles on each side and a cannon mounted on the cockpit's side. In this mode, it could be used independently as a reconnaissance vehicle. The Hoplite can carry 8 to 10 combat troops or can be used as a medevac to carry four wounded on stretchers, one medical corpsman (with equipment) and the crew.

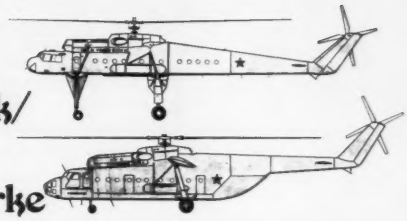
Mi-4 Hound

The Mi-4 was the first medium-sized helicopter to enter the inventory. It was designed in 1951 to lift between 1,200 and 1,600 kilograms of cargo or 8 to 12 armed Soldiers. There is also an armored version with strap-on pods containing a 12.7 mm machinegun.

Mi-8 Hip

The next helicopter to appear in frontal aviation was the Hip. It was designed to replace the Hound, found a place through the 1960s quickly and entered service with *Aeroflot* in great numbers. Since it is equipped with large rear doors, this helicopter is capable of transporting at least three Soviet rifle squads and small vehicles. The Hip is further proof that general-purpose aircraft can be armed. Variants have been observed with 12.7 mm machineguns, four 57 mm rocket pods and ATGMs. Moreover, each window in the cargo section is equipped with a support-to-hold Infantry weapon.

Mi-6 Hook/ Mi-10 Harke



It was a surprise to western observers when great numbers of the Hook and Harke began to appear in frontal aviation during the late 1960s. The Hook's performance was impressive with a world circuit speed record of 211.4 mph and a cargo load capacity of 26,500 pounds (with one-third fuel load).

Mi-24 Hind

The star of the show was the Hind introduced in 1974. In the cockpit of the Hind-A, the pilot and copilot sit back with the weapons-systems operator up front. In Hinds D and E, the pilot sits behind and above the gunner. The cargo area can carry 8 to 14 fully armed troops. The speed of an operationally configured Hind-A is to be verified, but on 18 July 1975 a helicopter of the same type set a speed record of 334.461 kilometers per hour. Prime variants now in service are the Hind-D and Hind-E.

The *Hind-A* has a 12.7 mm machinegun in the nose and less sophisticated aiming system. Hinds A and D mount four 32-shot, 57 mm unguided rocket pods and four AT-2 SWATTER ATGM rails. Air-to-ground missiles and bombs up to 250 kg can be carried also. The range of the 57 mm rockets is approximately 1,200 m, and the SWATTER has a range of approximately 3,500 m. Both can penetrate armor.

The *Hind-D* mounts a large caliber, four-barrel, Gatling-type machinegun; an all-weather sighting system; low light TV; and a laser rangefinder.

The *Hind-E* is similar to Hind D except spiral ATGMs replace SWATTERS. It is assumed that the Soviets feel a multirole capability helicopter fits better into their battle plans than the single-role type; for example, the AH-1 Cobra built by the U.S.

Helicopter usage has become a widespread phenomenon in the Soviet Army. As early as 1953, they were using helicopters to land troops in exercises. In 1959, Soviet tacticians described how they used helicopters to adjust artillery fire at night. Since 1976, the Soviet Air Force has received increased attention

FIGURE 2: Soviet Helicopters

DESIG-NATION	NATO CODE NAME	EXCL ROTORS LENGTH (FEET)	HEIGHT (FEET)	MAX SPEED LEVEL FLIGHT (MPH)	MAX RANGE FULL LOAD (MILES)	SERVICE CEILING (FEET)	CARGO CAPACITY (POUND)	PASSENGER ACCOMMO-DATIONS	ARMAMENT	REMARKS
Mi-1	Hare	39.5	12.5	106	147	5,000	2-3	NA		Older aircraft counter-part to OH-58A
Mi-2	Hoplite	39.1	12.3	136	105	13,755	1,543	8	Can carry up to 2,600 pounds of chemicals	Replacing Mi-1
Mi-4	Hound	55	14.4	130	265	11,800	3,650	16	Machinegun in nose	Older, widely exported, utility helicopter
Mi-6	Hook	108.7	32.3	186	404	14,750	26,450	65	Two machineguns in nose	Troop carrier and heavy transport
Mi-8	Hip	60	18.5	161	264	14,760	8,820	24	Up to six external rocket pods, ATGMs, MG in nose, bombs	Widely exported troop carrier
Mi-10	Harke	107.8	32.2	124	155	9,843	33,075	28	None	Flying crane also troop carrier version
Mi-12	Homer*	122	41	163	310	11,500	66,000	200	None	World's largest helicopter; carries troops and cargo together
Mi-24	Hind	57	14	190	240+	14,500	6,380	8-10	Machinegun in nose, antitank guided missiles, air-to-surface missiles and/or bombs	Soviet attack helicopter

**Never entered series production*

steadily due to the expanding role of the helicopter. This is evidenced by force structure changes and equipment modernization efforts. Due to increased use of the helicopter, commanders at all levels have become aware of how helicopters and their tactics can be used against them. Until 1976, most of the Soviet's helicopter fleet was used in observation or rear area cargo roles. Now, we find that many new tasks are assigned and new tactics developed.

Corps Level Maneuvers

Kavkaz-76. In January 1976, the USSR Ministry of Defense announced that corps level maneuvers, code named Kavkaz-76, would be carried out in the Transcaucasus Military District from 25 January to 6 February. It was said to involve nearly 25,000 soldiers. The maneuver featured conventional Soviet operations with emphasis on mountain operations and employment of several relatively new items of equipment, most notably the Hind gunship. The exercise wasn't, by Soviet standards, particularly remarkable if you're looking at number of troops. Previous exercises used as many as 100,000 troops.

Sever-76. Less than 4 months following completion of Kavkaz-76, the USSR announced its intention to hold another exercise—code named Sever-76. This exercise was conducted opposite the NATO northern region and included nearly 25,000 soldiers. It emphasized operations in marshy, rugged terrain typical of the northern regions. Air assault operations occupied a prominent place in the exercise. Armed Hind gunships and Hip transport helicopters conducted at least two tactical assault landings. An assault crossing of the Vuoksi River was carried out with heavy heliborne and artillery support, and part of Sever-76 was carried out in a simulated nuclear environment.

Shield-76. From 9 to 16 September 1976, the Warsaw Pact held its first widely publicized maneuvers, code named Shield-76, in 4 years. It took place in Western Poland and involved Soviet, Polish, East German and Czechlslovak forces. The exercise's troop strength was about 35,000. Tactical play in the exercise featured heliborne operations in conjunction with the Pact's tank and motorized infantry operations. One source noted that, "Those rotary wing aircraft are acquiring an increasingly broad range of combat employment."

The Soviet 1976 training year saw what they described as three large-scale exercises. As ***Krasnya Zvezda*** *(Red Star)* put it, "The emphasis in the current training year is a campaign to achieve further improvement in combat readiness to improve the quality of combat performance as well as persistent mastering of new equipment and weapons. Through the entire period of training, considerable attention is focused on

problems of tactics." This statement was reflected in the above exercises. All involved continued exercising and testing of new equipment and concepts (including armed helicopters and heliborne assault operations) but were no more than tactical in scope.

Karpaty-77. The first publicized exercise of 1977 was Karpaty-77 (27,000 troops) held in the L'vov-Lutsk-Rovno area of the Carpathian Military District from 11 to 16 July. Again, operations by Hind attack helicopters in an antitank role were noteworthy. The exercise scenario saw southern units—said to be somewhat superior in forces and means—attack northern troops who (despite heavy resistance) had their defenses penetrated, failed to halt a southern river crossing and withdrew in the face of unsuccessful counterattacks. Pursuing southern units, after a chase of several hundred kilometers, overtook northern forces and engaged northern march security elements and hastily brought up reserves in a meeting engagement. Southern superiority and combat initiative ultimately won the war.

Joint Maneuvers

There is no way to estimate accurately the number of maneuvers on the basis of press reports; however, we believe that the *Soviets and their allies* have conducted far more joint maneuvers than those reported in the Warsaw Pact press or coming to the attention of the West European press.

Helicopter Operations (Soviet)

The Soviets seem to be very serious about helicopter operations and have found what they believe to be the best tactics to employ them. In mid-1978, according to the ***International Defense Review*** , the Soviets employed more than 5,000 helicopters (3,800 in the military fleet and 1,200 used by ***Aeroflot*** and the ***KGB*** (Soviet secret police and intelligence agency). This is a threefold increase in 4 years, and it points out the fact that the Soviets recognize that the helicopter is critical to Soviet mobility. *The Soviets have built great numbers of helicopters, and theirs are some of the best in the world.*

Offensive Operations

Analyzing the experience of the 1973 Mideast War and Vietnam, the Soviets concluded that the defense based on new armament systems, particularly antitank and antiaircraft missiles, has obtained great superiority over the offense. Soviet tactical planners could also foresee the use of other new weapons not yet checked in a combat situation; e.g., missile artillery, remote mining and nuclear mine obstacles. It is believed that, with missile artillery bombardments of given areas with small but highly destructive antitank and antipersonnel mines, the whole tactical situation in these areas can be immobilized and forces crossing this area will sustain considerable losses. These factors make success of offensive operations of the ground forces doubtful unless mass use is made of the helicopter to promote neutralization of the new obstacles.

Mass Employment Operations

Consequently, mass employment of helicopters is becoming a necessity in tactics of ground forces. After overcoming obstacles and landing troops, helicopters can return to rear bases to be used over and over. However, if helicopters do not return to the rear they can be used to support frontline troops continuously. The Soviets feel this is most promising!

Tactical Operations

Airmobile raids have become one in a variety of new Soviet tactical operations. This type operation is used to penetrate quickly into enemy positions, destroy objectives, take prisoners, capture documents and weapons and return immediately to friendly positions. The same principle can be used to move artillery close to enemy lines, open fire suddenly, destroy enemy positions and return to the rear safely.

Cargo Helicopter Operations

Helicopters are also used to deploy troops rapidly after a nuclear attack. Soviet troops may be landed in 15 to 20 minutes after a nuclear strike. The troop helicopter is being used to provide rapid crossing of water barriers and to secure the opposite side so that bridging operations can be undertaken. They deliver and spread antitank and antipersonnel mines. The Soviets are ever expanding their use of cargo helicopters in new roles. The influence of the U.S. airmobile concept is very apparent in Soviet writings on the subject. Colonel Belov, a writer on Soviet military affairs, stated, "Airborne units are organized in new combined arms entities with combined reconnaissance and antitank sections. Landing forces can land with a high degree of combat readiness. All this makes assault operations a mass means of armed conflict." Many Soviet writings about air assault presuppose the possession of air superiority or supremacy.

Heliborne Operations

In all operations (including heliborne), Soviet ground forces are responsible for their own defense. That's why they arm most of their aircraft or have provisions

for troops onboard to provide fire from the aircraft.

Tactical Airlift Operations

It is estimated that each helicopter regiment in the Soviet Air Force has sufficient assets to conduct a tactical lift of a motorized rifle battalion, relying mainly on helicopters such as the Hook, Hip and Hind. This is the most likely unit to use in any type air assault because of its assigned weapons and equipment. This type unit could fight in a behind-the-lines situation.

Airmobile Operations

Let's examine a typical airmobile operation in detail. The Soviets feel that a tactical heliborne operation can be planned and launched in a matter of hours. During early stages, the unit will increase its reconnaissance of the objective. Then the size of the assault force would be determined based on the type operation. Chosen elements would be issued special equipment needed. Once the force has been briefed thoroughly, they board helicopters in dispersed areas. En route to the objective and escorted by helicopter gunships, they will use areas held by friendly troops and then enter enemy territory at the last possible time under the cover of tactical air (tacair) support, if available. Tacair stays with them through the initial landing. Hopefully, the enemy territory flown over has been suppressed or neutralized.

After landing, the force would deploy; lift helicopters would return to their bases; and the bulk of the ground force would attack its objective. Other elements of the attack force would engage other security forces used in protecting the objective; another element would attack enemy transportation and communications and surveillance sites; and one element would attempt to cut off withdrawal routes and intercept any possible reinforcements.

Special Helicopter Missions

Once the operation is complete, the force would attempt to return to friendly lines or wait until friendly troops advance to link up. Deployment of the Hind has increased (immeasurably) the Soviet's ability to conduct such operations and any other type mission. Other types of special missions for helicopters include:

- Communications relay.
- ESM/ECM (electronic warfare support measures/ electronic countermeasures).
- Psychological operations.
- NBC (nuclear, biological and chemical) reconnaissance.

Survivability In Combat (Helicopter)

Despite armament and flexibility, the Soviets are aware that helicopter survivability in combat is vital and cannot be ignored because of rapid development of air defense weapons. Accordingly, Soviet helicopters can be expected to avoid heavy troop and weapons concentrations to the maximum extent unless sufficient tactical air and artillery suppressive fires are available to reduce effectiveness significantly.

Russia's Drive Toward Supremacy

In March 1977, then outgoing Defense Research and Engineering Director, Dr. Malcolm R. Curry, admitted to Congress that the Hind-D was a surprise to western intelligence officials. He noted that Russia's, "determined drive towards supremacy in deployed military technology has not abated." He also confirmed indirectly that the Soviets had already tested a new long-range, fire-and-forget missile. He then told Congress that the Army's new advanced attack helicopter (AAH), "when deployed would only match currently (1977) developed Soviet systems in attack capability." Dr. Curry added, "The Hind-D is the most heavily armed assault helicopter in the world and carries sophisticated weapons delivery and fire control equipment."

Even though Soviet helicopter production has increased sharply in recent years, NATO's output exceeded the Warsaw Pact by 40 percent in 1974 and 1975. But that changed in 1976, as a result of a dramatic change in Warsaw Pact helicopter production, which was twice the United States output.

United States Versus Soviet Attack Helicopters

The Hind differs from U.S. attack helicopters in many respects. It's bigger than the Cobra, carries more armament and serves as a combination scout-attack-transport helicopter. The Soviets feel that having three different aircraft perform these roles would cause an air traffic control (ATC) problem especially at night or in marginal weather conditions. One reason the Soviets want long-range missiles is that their doctrine requires attack helicopters to stay as far as possible from units being attacked even though contour and nap-of-the-earth flying are emphasized.

Cockpit Instrumentation on Hind

The Hind's instrumentation is said to be about the same as U.S. helicopters with some advantages in a few areas. These include:

- ADF navigation on at least three stations with

continuous readout for X and Y coordinates and a map display so they can be plotted very quickly.
- A stability augmentation system (SAS).
- Three generators.
- Two electrical systems that use 800 cycles to reduce the size and weight of wiring harnesses and generators and permit electric rotor blade deicing on all blades
- Bulletproof, flat antiglare cockpit windows.
- Twin turbine engines.
- Rotor blade deicing.

Primary Role of Hind

One of the primary roles of the Hind is that of an antitank weapon. LTG Reznichenko, a respected Soviet author, wrote, "They are superior to other antitank weapons in terms of field of vision, maneuverability and firepower. They are capable of hitting armored enemy targets while remaining out of reach of antiaircraft weapons. The correlation between tank and helicopter losses is 12:1 or even 19:1 in the helicopter's favor, according to practical experiments." General Reznichenko also feels that modern warfare has acquired an exceptionally strong anti tank weapon in the helicopter. He said, "Let the tanks aim their machineguns at them. Helicopters will be able to strike first from afar. The crew has everything required to destroy the tanks; the most accurate sights, missiles plus combat skills."

Basic Antitank Helicopter Formation

This formation is apparently a flight of four with the flight commander bearing a large portion of the responsibility for the mission's success. The commander gives the command for the turn in to the final approach to the target and ensures that each of the crew has mastered the various aspects of the mission before the aircraft takes off. There is extensive use of simulators to practice aiming ATGMs. Everything is coordinated and practiced on the ground. The firing approach is carefully calculated ahead of time so that there is no requirement for position keeping. During the attack, all attention must be on the target with the helicopter kept as stable as possible.

Special Optical Devices

The helicopters are painted camouflage green on top and blue underneath. They are equipped with special optical devices that enable the weapons operator to see tanks even though they are camouflaged and hidden among trees. The requirement for the weapons operators to keep their eyes pressed against the viewing device during the attack is so intense that, after the mission is completed, the impression of the rubber protector is clearly visible on the operator's face.

Hind's New Antitank System

The Soviets envision that the helicopters will approach targets at a height of 5 to 10 m, then pop up from 20 to 100 m to fire at targets from ranges between 2,000 to 3,000 m. This process should take between 20 to 30 seconds. It has been reported, in ***Jane's All the World's Aircraft,*** that a new antitank system is under development for the Hind with a fire-and-forget guided missile and an optical-contrast TV seeker which has a range of about 5 miles.

Fire Support/Antitank Roles

Soviet combined arms commanders must know the capabilities of fire support helicopters as well as they know those of artillery. They should know the characteristics of armament installed on helicopters and when it is used against different targets. These commanders must work out methods of calling helicopters forward, guiding them to the targets and maintaining uninterrupted communications.

Colonel Savkin (Soviet), in ***Principles of Operational Art and Tactics,*** stated, "Armed helicopters can operate as accompanying fire for tanks and for infantry in personnel carriers. Moreover, they can attack as part of the forward detachment and advance guards, cover the rear and flanks of friendly forces, disrupt the movement of enemy reserves and destroy small enemy reconnaissance units."

Russia's Follow-on Attack Helicopter

In January 1978, U.S. Representative William L. Dickinson (R-AL), after talking about the Hind-D, told a meeting of the American Helicopter Society in Washington, "The Russians have a follow-on attack helicopter which is thought to be equal to or better than the Hughes AH-64."

The first Hind was not spotted until 1974. If it is true that five variants of it now exist, as some people seem to think is the case, the Soviets have turned out a new model of attack helicopters about every 10 months. Between 1974 and 1977, more than 450 Hinds became operational. At that rate, *an average of 15 per month is being produced with no indication of slowing down.*

Armed Helicopter's Role

In a book published in 1972, Colonel Savkin begrudgingly admitted, "The armed helicopter may turn out to be a means of fundamental change in the nature of ground combat. Although the helicopter is not ideally suited to this role, it nevertheless possesses those characteristics which most ensure superiority in mobility."

Helicopters, particularly armed ones, have become very much an integral part of Soviet combined arms operations. It appears that, after a thorough analysis of helicopter operations in Vietnam and the Mideast wars, the Soviets have developed a unique Soviet approach to helicopter employment. They have adopted and modified numerous other aspects of foreign concepts, rejected others and added their own war fighting philosophy. In so doing, they have created a formidable force of helicopters.

Limited Life of Soviet Helicopters

The biggest weakness of Soviet helicopter designs, as most U.S. rotary wing experts see it, is their limited life of operational durability. If Soviet helicopters fly 100 to 500 combat hours, they are satisfactory. They don't feel that a war will last that long. And to emphasize the folly of fine tuning their helicopters for multi-thousand hour reliability, which characterized U.S. military design standards, the Soviets point to the massive number of U.S. helicopters lost in Southeast Asia (most after short lives in the field). According to ***Armed Forces Journal*** (December 1976), 4,869 helicopters were lost in the Vietnam War (2,281 due to hostile action and the rest due to operational causes).

Although flown by Soviet Air Force pilots, Soviet helicopters, with their variety of cargo and attack capabilities, are not Air Force weapons. They form an integral and important part of the combined arms doctrine, whose employment in battle will be dictated by the Soviet ground commander of tactical forces, and have adapted surprisingly well to the new Soviet theory of war.

Soviets Adaptation to Helicopters

It is clear that adaptation by the Soviet forces, in the use of helicopters since the end of World War II, has been successful. This gives them increased mobility, maneuverability, striking power, surprise and fire power. Large units and operational formations are able to deal with tactical and operational tasks on their own.

The Soviets appreciate the effectiveness of modern antitank defense and realize the necessity of achieving such total surprise and maintaining such a high rate of advance that the enemy would never have time to establish its antitank strongpoints or forces in the first place.

One of the main threats to the ability of a mobile unit to survive was considered air power; therefore, measures for improving antiaircraft systems, at the expense of updating other ground support equipment, were undertaken in the 1960s.

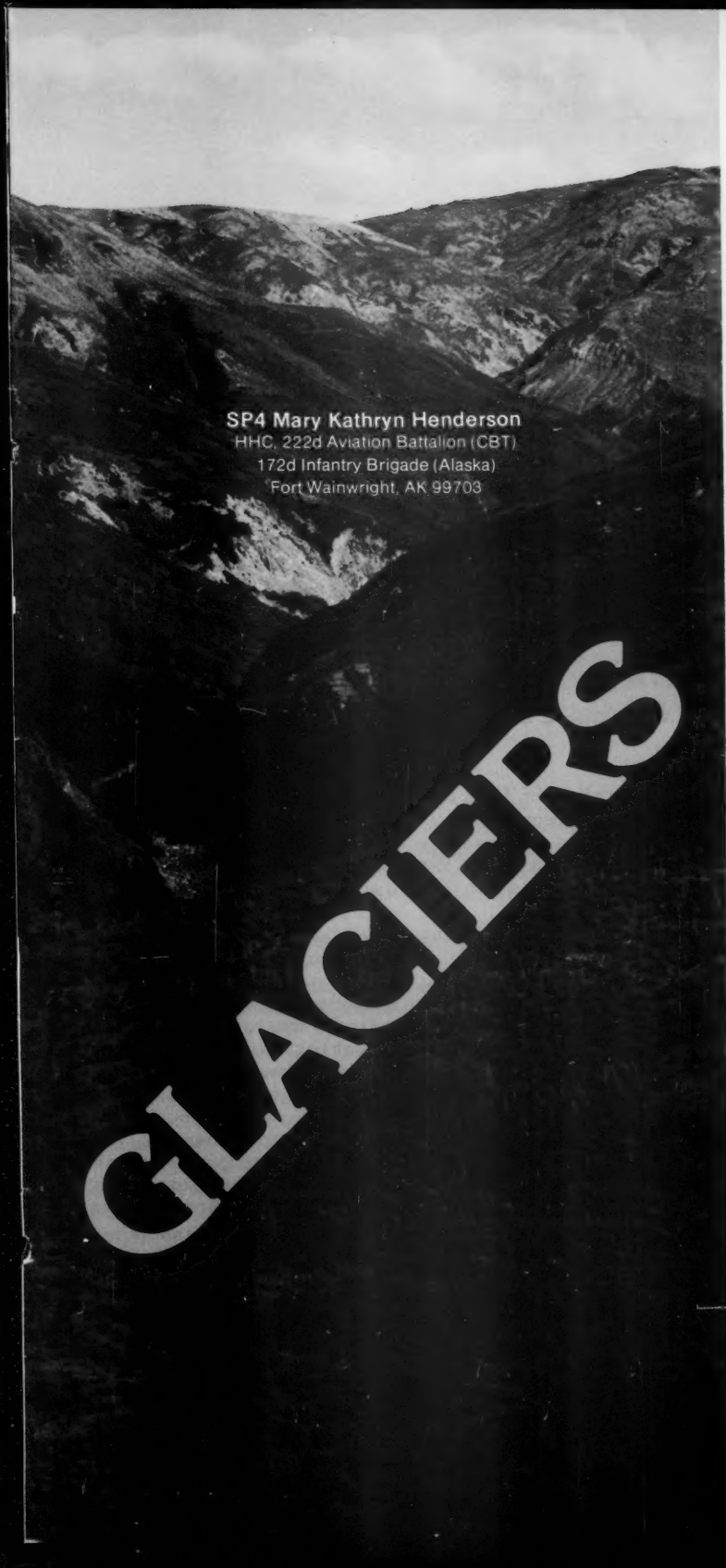
Inadequate Tactics and Equipment (Soviet)

Forced to meet political requirements in the 1970s, the Soviets found it necessary, not only to be able to win the next war, but to do it very quickly! Along with this realization, they decided that both tactics and equipment were not adequate to the task. Equipment was nonexistent or in short supply and often was unsuitable for its intended use.

Summary

The sum of the above efforts demonstrates how the Soviets plan to win a war quickly. Their plans are not unique or original, and they recognize that there are enormous problems which will hinder execution of their plans.

However, if the Soviets are successful in *achieving surprise, shock or disrupting political stability prior to the outbreak of war and catching an enemy half mobilized, undeployed or ill prepared, then their troops (with only a mediocre level of training) will achieve desired results during an offense!*



GLACIERS

SP4 Mary Kathryn Henderson
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I AM an SP4 journalist in the U.S. Army; and, when I joined the Army, I was told I would have lots of "exciting experiences." But, I never thought that one of those experiences would be flying up to the Alaskan glaciers in a UH-1H Huey helicopter.; I was given the opportunity to fly up to the glaciers with Captains Elious E. Zenon II and Philip A. Trueblood, Headquarters and Headquarters Company, 222d Aviation Battalion, Ft. Wainwright, AK.

Being the adventurous type that I am, I decided to take the opportunity. I loaded up my winter gear and headed to the hangar at 0830 hours. The process for taking off in the helicopter was more work than I'd ever expected. The pilots and crewchiefs had many duties to perform before we could even start the engine.

The pilots first called to find out what the weather report was for the area in which we would be flying; they then filled out the proper forms, plotted the flight on the maps and filed their flight plan. This process took an hour or so. Then it was out to the aircraft and I was ready for the takeoff, but then CPT Zenon explained that he was doing a preflight on the aircraft. (Preflight is a functional check that the pilot performs on the aircraft before starting out.) The pilots thoroughly checked the helicopter for any discrepancies.

"A thorough preflight may take a little extra time," said CPT Zenon, "but if we don't take the time, there may never be any more time to take. It's imperative to take time to check and see if the helicopter is in excellent condition," he added. I took his words of wisdom to heart since it was my life that was going up in the helicopter. I was then given a passenger briefing by the pilots and the crewchiefs; I felt somewhat assured of a safe flight.

Finally both captains were in the pilots' seats and the crewchiefs were checking the helicopter as the engine

started. Everything checked out okay, everyone was aboard and we were cleared for takeoff, so off we went.

I put a flight helmet on so I could listen to what the pilots and crewchiefs were saying to each other and to the tower, because this was my first helicopter flight—and I wanted to learn all I could. I was confused by all the numbers and words they were saying to each other, but I knew they meant something important. I knew then that being a pilot was more than flying a helicopter.

The flight to Ft. Greely, AK, was very scenic. Being in the helicopter gave us the opportunity to fly lower than I'd ever flown, and I captured some very beautiful pictures. The ride was very smooth and everything seemed to be gliding by us. The doors were open while we were flying, and it seemed as though the hills and rivers were close enough to touch.

Captains Elious E. Zenon and Philip A. Trueblood preparing for takeoff

As we prepared to land at Allen Army Airfield, Ft. Greely, I got ready for what I thought was going to be a rough landing. We hovered barely above the ground for a few seconds and then, to my surprise, the aircraft touched down with hardly a motion. I learned that you don't just shut the helicopter off and get out. The blades twirled for several minutes as the crewchiefs got out to inspect and ensure that everything was running smoothly. The pilots then turned buttons and flipped switches until the aircraft was completely shut down. While the pilots checked in and filled out the flight plan and necessary forms, the helicopter was being refueled. There are many extra things to do and usually these things go unnoticed by passengers.

The flight to the Summit Lake Lodge area proved as scenic as the rest of the trip had been. We landed at Summit Lodge where the 4th Battalion, 9th Infantry had tents set up for glacier training. While landing the aircraft, we proceeded to blow the tents partially over. I was told this frequently happens when pilots are unable to land on an airstrip and the landing area is limited. We had some hot coffee and then flew up to Gulkana Glacier.

The weather was clear and the scenery beautiful, this too was a surprise to me. Being in Alaska and having been told by everyone to prepare myself for extreme cold, I expected only the worst weather possible. While flying over the glacier I heard the pilots say, "do you see anywhere to land down there?" I perked right up. Every terrible thing I had ever heard about flying flashed before my eyes. Could they do it? Would we crash? Will I live to see tomorrow? I mean here we are on Gulkana Glacier and they've never landed here before. Again the landing area was limited, so it seemed to me. We flew over the area several times to make sure of the landing potentials, suddenly I opened my eyes and there we were, safely on land. I hopped out of the helicopter and all you could hear was my camera clicking. There I was, ice under my feet and the sun beaming down on my face, standing on the glacier-*Oh if they could see me now,* was my only real thought.

We dropped off our passengers to head on up the glacier and our mission was completed.

On the way back, we flew high enough to get some pictures of the clouds and low enough to get pictures of the forest and water areas. The things we could do in that helicopter were fascinating. The pilots were most impressive with their flying performance to a person who was taking their first flight ever in a helicopter.

Finally we landed at Wainwright Army Airfield at 1800 and as the aircraft was being shut down I reflected on the day's events. This opportunity gave me a chance to see what the flying life is like. It truly was an "exciting experience."

Increasing Efficiency in Mobility Fuels

An approach to energy conservation

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THE ARMY ENERGY Plan was published in February 1978. It established energy conservation goals and short- and long-term objectives. Rather than maintain an energy posture of zero growth, this dynamic program called for *reduced* energy consumption to the year 2000 as well as a reduction in the Army's dependence on scarce and nonrenewable fuels. Although the Army had consistently performed well against the previous prevailing goals, it was clear that newer, more innovative conservation measures were required.

In accordance with this new mandate, all levels of command have placed increasing emphasis on monitoring energy consumption and generating new initiatives to increase the efficiency of energy use. It is particularly within the field of mobility fuels that many of these efficiency-increasing steps can be applied, thus ensuring a more effective rate of return on our training dollars.

Due to the large volume of aviation training conducted at the U.S. Army Aviation Center (USAAVNC), we at Ft. Rucker, AL, are especially concerned about mobility fuel consumption. Because of our sizeable aircraft fleet and its huge fuel consumption rate, Ft. Rucker is the largest single user of mobility fuel within the U.S. Army Training and Doctrine Command (TRADOC) community. Our increased student load and the attendant increase in our flying hour program have not only resulted in a significant consumption of mobility fuels but also have offered us numerous opportunities to increase fuel efficiency through a judicious conservation program.

Recognizing our tremendous consumption of fuels in Army Aviation training and related support, we promptly determined our need to develop a method for measuring our fuel efficiency which would be congruous for the total environment. A stepwise method for establishing such an efficiency measurement is outlined below.

STEP 1: Determining A Baseline.

Because of the obvious differences in aircraft which comprise the Aviation Center training fleet, some standard had to be developed against which all aircraft fuel consumption could be compared. The bulk of our aircraft fleet consists of UH-1 Hueys, and they consume most of our fuel. Thus, the UH-1 was selected as the baseline aircraft. Since the actual fuel consumption rates of each aircraft are known, the UH-1 was assigned an arbitrary fuel consumption factor of 1.0000. All other aircraft consumption rates were then divided by the UH-1 rate and expressed as a factor of the baseline. For example, the CH-47 Chinook uses more than four times the amount of fuel per flying hour than does the UH-1. Specifically, the CH-47 fuel consumption factor is

AIRCRAFT TYPE		FUEL CONSUMPTION FACTOR
TH-55		0.1704
OH-58		0.2765
UH-1	(BASELINE)	1.000
OV-1		1.6174
T-42		0.3156
U-21		0.9469
CH-47		4.0404
UH-60		1.6414
AH-1		1.0469
AVERAGE		1.2285

FIGURE 1: Fuel consumption factors

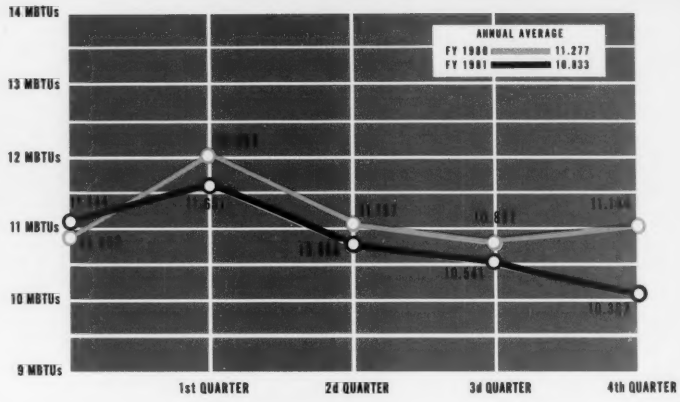


FIGURE 2: MBTUs consumed per training hour

4.0404, as shown in figure 1. It is imperative that this first step—determining a baseline—be computed carefully because it is against this standard of fuel consumption per hour that all calculations will be made. Additionally, maintaining accurate and consistent data cannot be overemphasized. The results of the program will only be as valid as the data used to calculate them. It should be pointed out that such a baseline could be computed for any other fuel consuming vehicle in the Army inventory.

STEP 2: Computation of Totals.

In step two we merely multiply the fuel consumption factor that we have computed for each aircraft by the number of hours that aircraft was flown during the time period. We call this result the total flight hour equivalent by aircraft. These figures are then totaled for our entire aircraft fleet.

STEP 3: Determination Of Fuel Efficiency.

The final step merely requires dividing the total Million British Thermal Units (MBTUs) consumed during a time period by the total flight hour equivalent for that same period (found during step 2). The result is a number which represents MBTUs consumed per equivalent training hour. This equivalency serves as a common basis for comparison, since the actual hours flown by type aircraft vary greatly from month to month. This procedure, then, provides a highly reliable indicator of fuel efficiency. Figure 2 shows a comparison of our progress during fiscal year 1981 as compared to FY 1980, and figure 3 provides a sample format for computations.

Now that we have a reliable basis for comparing fuel efficiency, we can consider some of the initiatives undertaken by the Aviation Center to conserve this important resource. Although some of these actions may seem at first glance trivial, the impact of their implementation has been tremendous. Some of these actions, briefly described below, are to:

- Maximize the use of our flight simulators; i.e., use them instead of aircraft when possible.
- Stress flight planning as a positive method of reducing fuel consumption on every flight.

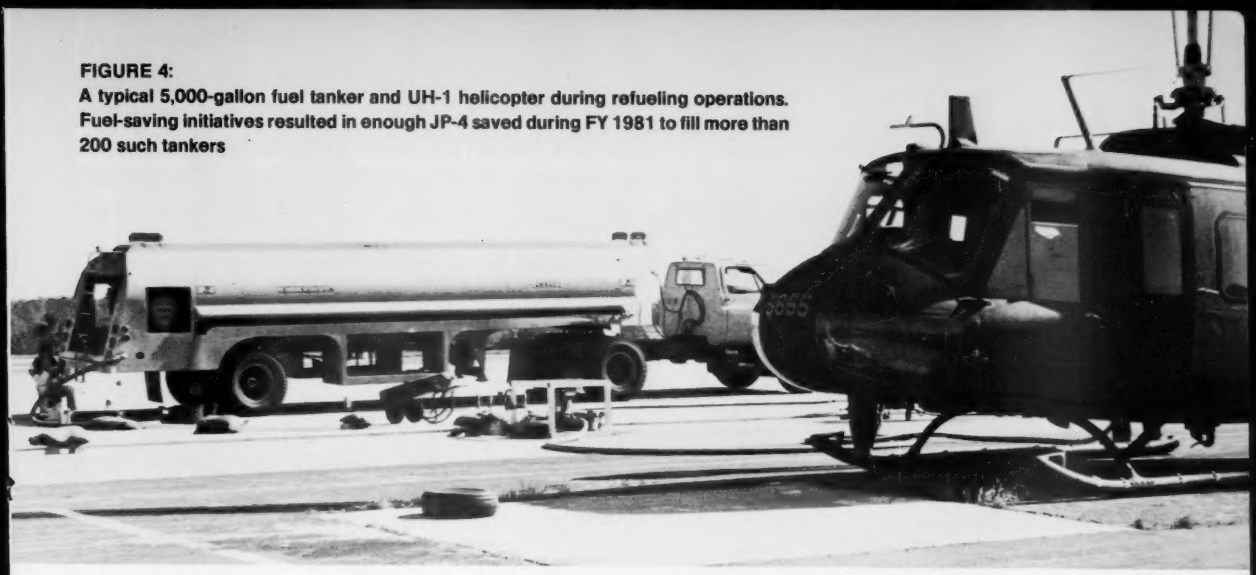
FIGURE 3: Equations used

STEP 1 $\left\{ \dfrac{\text{FUEL CONSUMPTION RATE FOR TYPE OF AIRCRAFT}}{\text{FUEL CONSUMPTION RATE FOR UH-1}} = \text{FUEL CONSUMPTION FACTOR} \right.$

STEP 2 $\left\{ \text{FUEL CONSUMPTION FACTOR} \times \text{ACTUAL FLIGHT HOURS} = \text{EQUIVALENT FLIGHT HOURS} \right.$

STEP 3 $\left\{ \dfrac{\text{MBTUs CONSUMED}}{\text{EQUIVALENT FLIGHT HOURS}} = \text{MBTUs PER TRAINING HOUR} \right.$

FIGURE 4:
A typical 5,000-gallon fuel tanker and UH-1 helicopter during refueling operations. Fuel-saving initiatives resulted in enough JP-4 saved during FY 1981 to fill more than 200 such tankers



- Require pilots to receive instrument clearances prior to starting the aircraft engine, thus reducing running time at engine idle.
- Increase the number of rapid refueling points at tactical sites, thus minimizing the length of ground refueling time and precluding shutdown/runup idling time.
- Accomplish closed circuit rapid refueling at engine idle rather than at operating revolutions per minute.
- Minimize debriefing time in the cockpit while the engine is running.
- Consolidate administrative missions and demonstration flights, i.e., where possible, perform these missions in conjunction with aircrew training manual (ATM) training flights.

While the above list is by no means exhaustive, it does provide an indication of the direction we are headed at the Aviation Center. Through these and other initiatives, we have managed to decrease our MBTU consumption per flight hour from 11.277 in FY 1980 to 10.833 in FY 1981 (figure 2). This is an improvement of 3.9 percent MBTU per flight hour. What does this increased efficiency mean to the Army? Specifically, during FY 1981 our fuel conservation initiatives resulted in a direct savings of 135,545 MBTUs. This equates to an actual savings of more than one million gallons of JP-4, at a cost of almost $1.4 million.

This savings, however, serves only to point out the direction in which we need to move. With other anticipated initiatives, we expect to significantly improve our position in the months ahead. Our goals at Ft. Rucker for FY 1982 are an additional improvement in mobility fuels efficiency, in order to reduce our consumption below 10 MBTU per flight training hour. Any ideas you have to help us achieve this goal would be more than welcome.

Although the Ft. Rucker model is in some respects unique due to our extensive aviation training program, the steps outlined above can nevertheless be adapted to any type unit. It is hoped that this article will spark some energy conservation ideas on other installations, particularly regarding efficiency in mobility fuels. Please send your ideas to: Editor, *Aviation Digest,* P.O. Drawer P, Ft. Rucker, AL 36362.

FIGURE 5:
Aircraft being refueled using closed-circuit rapid refueling (CCRR) during training. Accomplishing CCRR refueling at engine-idle RPM is one of the fuel saving initiatives employed by USAAVNC. Increasing the number of CCRR points resulted in fewer delays and more fuel saved

VIEWS FROM READERS

Editor:

Would you please be so kind as to direct this letter to the appropriate department whereby I may obtain a copy of an article printed in a past issue of the *Aviation Digest*.

The article I seek a copy of is entitled, "How to Crash by the Book." I was advised that it is in the September and November issues for the year 1977. I understand it is an excellent article on the loss of effectiveness of the tailrotor of an observation type helicopter. I would very much like to have a copy.

If you cannot furnish me a copy perhaps you would be kind enough to advise me where I can obtain a copy. I will be most happy to pay any reasonable charge for the service. If a copy is available, please mail to the above address. Thank you!

Robert L. Ayers
3 Bellamy Court
Champaign, IL 61820

• The article you refer to first was printed in September 1977 under the title "How to Crash by the Book," and was reprinted in the November 1978 issue under the title, "OH-58 Tail Rotor Stall." It was reprinted because of a visit to the Safety Center by an Army aviator who credited it with possibly saving his life. When he encountered tail rotor stall in an OH-58, he remembered the original article and applied what he had read in the *Aviation Digest* to accomplish a safe landing.

Editor:

I have read a copy of your publication (for the first time) while at the convention of the AUSA in Washington, and, I found it very interesting.

If possible, I would like several back issues, as well as a subscription.

CPT Harry Belil
New Breed Publications Inc.
Naneut, New York, NY 10954

• Annual subscriptions are available by sending a remittance of $22.00 ($27.50 for overseas addresses) to: Superintendent of Documents, U.S. Government Printing Office, Washington, DC 20402.

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CORRECTIONS

The article "Hangar Talk" in the October 1981 issue of the *Aviation Digest* contained an error. The correct response to question 9, "Personnel wearing earplugs during high-continuous noise conditions can hear both direct voice and radio communications better than a person not using earplugs," should have been choice "A"—True, as indicated in the reference, TC 1-20, pages 7-4 and 7-9.

In the November 1981 issue of the *Aviation Digest* the name of the author of the article, "Cobra Vs. Hind," was erroneously carried as Captain Dale W. Moffatt. It should have read Captain Alan W. Moffatt. The *Aviation Digest* apologizes to Captain Moffatt for any embarrassment this may have caused.

UH-1FS **AH-1FS**

The *Aviation Digest* regrets that the cutlines were transposed for two of the flight simulators in the November 1981 issue. They appear correctly at left.

WANTED: Humorous or human interest anecdotes about Army Aviation for use in the June 1982 issue of the *Aviation Digest* to help observe the 40th Birthday of Army Aviation. Send your contributions to Editor, at the address below.

Articles from the *Aviation Digest* requested in these letters have been mailed. Readers can obtain copies of material printed in any issue by writing to: Editor, *U.S. Army Aviation Digest*, P.O. Drawer P, Ft. Rucker, AL 36362

RSI Report

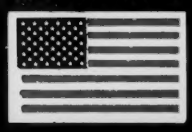
Mr. Rush Wicker

THE ELEVENTH meeting of the Quadripartite Working Group on Aviation (11th QWG/AVN) was held in Montreal, Canada, 14 through 18 September and was attended by American, British, Canadian and Australian (ABCA) delegates. It was the consensus, both before and after the meeting, that the agenda was the most challenging ever undertaken by any QWG working group. The scope of the agenda was diversified, addressing both materiel and operational agreements for current and future requirements. Each nation's delegates approach their individual taskings with a positive attitude and a feeling that their efforts will contribute to the overall goal of achieving standardization and interoperability among helicopter forces that participate in the land battle. A summary of the more important accomplishments of the meeting is:

- The delegates reported that their nations have generally approved a draft Quadripartite Objectives (QO) for Army Aviation; prior to the development of this QO, standardization agreements for Army Aviation were based on QOs for other branches of the Army. This development will allow QWG/AVN to relate more to the needs of Army Aviation.
- The Quadripartite Advisory Publication (QAP) was introduced as a new type publication for the ABCA program. This publication allows nations to share information where standardization is not feasible. Several of the existing concept papers were recommended for development as QAPs.
- Each of the nations reported general acceptance of QSTAG 645, Cross-Servicing of Helicopters Engaged in Land Operations. This agreement is being staffed within NATO (North Atlantic Treaty Organization) as a standardization agreement (STANAG). The purpose of the STANAG is to establish a means by which one nation's helicopter can receive services from and by another nation's ground crews, primarily in emergencies.
- The United Kingdom delegate proposed a new agreement for the standardization of tactical approaches and departures from field sites. The purpose of the agreement is to develop a standard procedure to be used during joint operations. Nations will comment on the draft when circulated by the United Kingdom.
- The age-old problem of airspace management over the battlefield was addressed. Each nation voiced its position. The United States presented an operational concept for airspace management based on the Division 86 concept. The delegates agreed to review the paper and provide comments. We hope that this draft concept will provide the basis for airspace management doctrine within the ABCA alliance.
- Each of the nations expressed increased interest in aircraft survivability equipment (ASE). The draft concept paper on ASE was approved and action was initiated to develop two QSTAGs on specific items of ASE.
- Based on presentations received at the 11th QWG/AVN meetings, the working group identified the need to develop concept papers for future requirements. The following concept papers were initiated by the working group.
  - Helicopter battle damage repair requirement to the year 2000.
  - Family of aerial vehicles for land forces in the year 2000 and beyond.
  - Aviation life support equipment to the year 2000.
  - Aircraft recovery concepts to the year 2000.
  - Improved maintenance concepts up to the year 2000.
  - Avionics requirements to the year 2000.

The 12th meeting of QWG/AVN will be held in March 1982. During the interim, draft agreements and concept papers will be circulated to the appropriate agencies for comment. Some of these agreements will be ratified by the nations. These agreements will then be incorporated into national documents which will contribute to achieving the goal of the standardization program. Hopefully, in the future if you should participate in a multinational operation, you will find that the equipment of other nations is interoperable with your own and their operational procedures are the same as yours.

If this article has generated any questions or requirements please contact Mr. Rush Wicker by writing: Commander, U.S. Army Aviation Center, ATTN: ATZQ-D-CC, Ft. Rucker, AL 36362.



U.S. Army Communications Command
ATC ACTION LINE

VIGNETTES

CW4 Peter C. McHugh
Aeronautical Information Specialist
U.S. Army Air Traffic Control Activity
Aeronautical Services Office
Cameron Station, Alexandria, VA

WHEN THE MOCA isn't! Most Army aviators can quickly provide a definition of both minimum en route IFR altitude (MEA) and minimum obstruction clearance altitude (MOCA)—that is to say they know that MEA is:

"The lowest published altitude between radio fixes which assures acceptable navigational signal coverage and meets obstacle clearance requirements between those fixes. The MEA prescribed for a Federal Airway or segment thereof applies to the entire width of the Airway, segment or route between the radio fixes defining the Airway, segment or route."

(Ref FLIP GP)

And they know that MOCA is:

"The lowest published altitude in effect between radio fixes on VOR Airways, off-airway routes, or route segments which meets obstacle clearance requirements for the entire route segment and which assures acceptable NAV signal coverage only within 25 statute miles (22.5 NM) of a VOR."

(Ref FLIP GP)

One would infer from the definitions above and particularly the use of the words "Federal" and VOR, and also the figure, that there exists a deviation from these generally accepted definitions. The wise aviator should know how the symbology depicted in the figure can legitimately occur.

The definitions above certainly cannot apply in this case since the designated MEA on V1 is 6,900 feet lower than the MOCA. If MEA assures radio reception for the entire route and MOCA for only 22.5 NM from each facility how can MOCA be higher than MEA? How is it that V18 shows only a MOCA with no MEA?

Obviously some definitions other than those above apply to this particular example which was extracted from a low altitude en route chart from the Caribbean Area. Reference to section C, theater flight data and procedures, of the Caribbean and South America En Route Supplement provides the following definitions under the title "cruising altitudes."

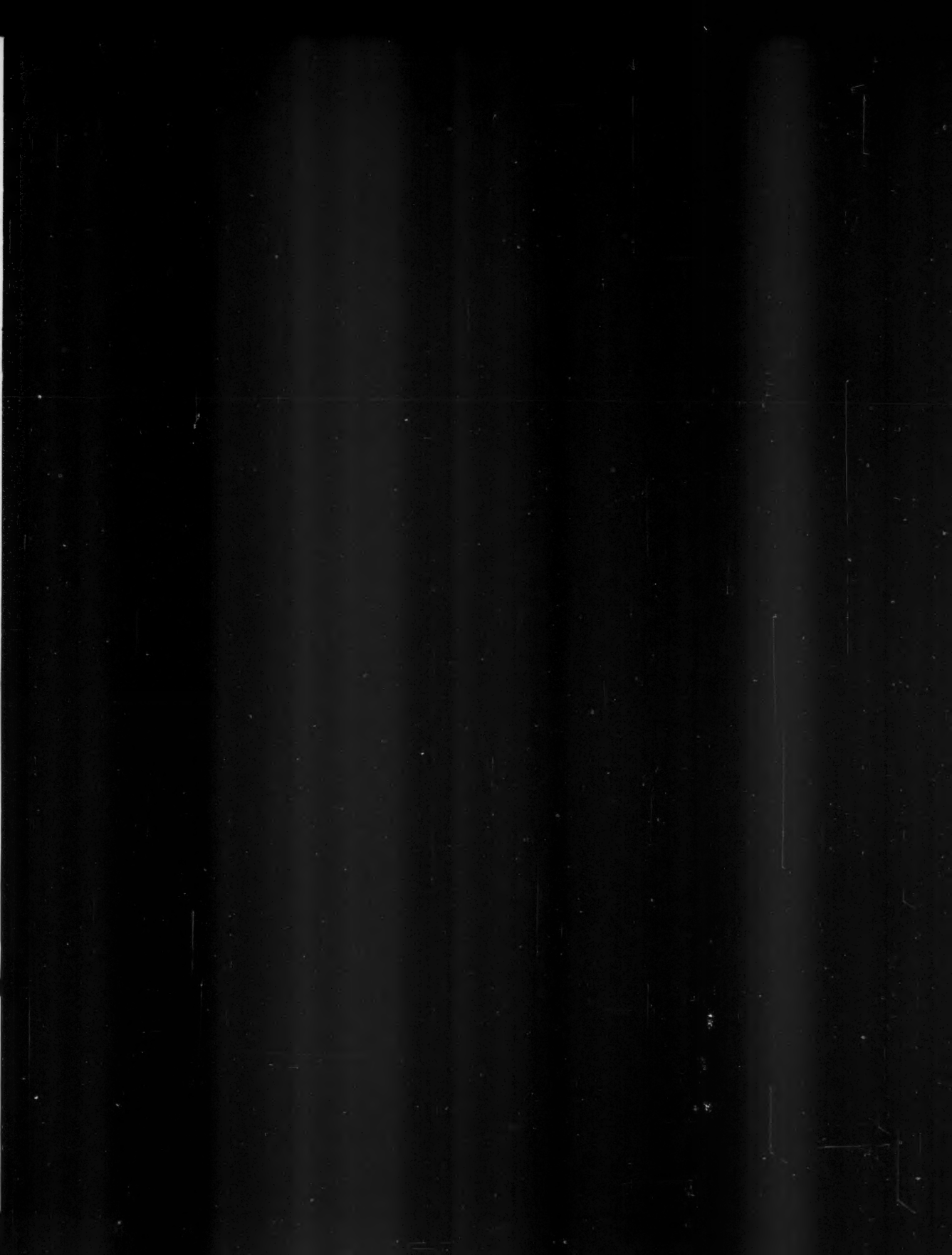
"(MEA)—the minimum en route as established and published by a responsible national agency will be shown in both controlled and uncontrolled airspace."

(Ref FLIP C&SA En Route Sup)

"(MOCA)—Those altitudes which provide 1,000 feet clearance in non-mountainous and 2,000 feet clearance in mountainous terrain within 22 NM of any point on the intended flight path in uncontrolled airspace, or within 10 NM of any point on the intended flight path when shown in controlled airspace. MOCA may be shown in conjunction with MEA in uncontrolled airspace to call attention to a requirement for caution in flying at the MEA. USAF/C&SA MOCA are based upon elevation data contained on current USAF ONC charts and when published represent a minimum terrain clearance altitude rather than a MOCA in the true sense as defined by FAA."

(Ref FLIP C&SA En Route Sup)

The same discrepancy of definition exists in the European Theater, Pacific Theater and in Africa. Minor differences in application occur in each area and all aviators must make themselves aware of these by reference to the appropriate En Route Supplement.

Readers are encouraged to address matters concerning air traffic control to:
Director, USAATCA Aeronautical Services Office, Cameron Station, Alexandria, VA 22314

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